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A CONTRIBUTION TO HEPATIC SURGERY,

WITH A SUGGESTION FOR RENDERING A PORTION OF THE LIVER EXTRAPERITONEAL.

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IN the following pages I have ventured to place in the same category the two apparently very dissimilar pathological conditions, abscess of the liver and stone in the gall-bladder, because a cure was wrought in both instances by operative measures in the main identical. The important part of each operation was the shutting off of a portion of the liver by suture from the general cavity of the belly, so that treatment could be directly applied irrespective of the neighboring but not entirely investing peritoneal sac.

CASE I. *Abscess of liver following dysentery; laparotomy; suture of parietal peritoneum to liver: drainage and irrigation of abscess cavity; cure.*—H. B., male, aged twenty-four years, American parentage, a winner of athletic prizes (long distance runner), gave the following history. October, 1884, he suffered from acute dysentery which greatly debilitated him. March, 1885, he started on a Southern trip, but returned in a month, dysentery having reappeared. In July he went to the mountains, deriving benefit, and in August to the seashore, but derived no advantage to his health. During the following winter his bowels were irregular as also during the spring, appetite was capricious and exercise impossible owing to general lassitude. He was now told by his physician that he suffered from congestion of the liver. During the summer and autumn of 1886 bowels, appetite, and general lassitude did not improve, pain in the right shoulder was occasionally noticed, and two or three chills, at irregular intervals, occurred.

I first saw the patient January 20, 1887. His general aspect was scarcely that of a man who had been ill twenty-seven months. His

complexion was pale, lips pink, in walking the trunk was held stiffly erect, and when seated a pillow was always placed behind the back for support. Measurement showed the base of the right chest slightly larger than the left. The liver did not project below the ribs, but the respiratory murmur was less marked in the lower right chest than on the left side. Percussion revealed nothing. Heart was normal. Examination of urine, as well as rectal exploration by sight and touch, was negative. The bowels were usually constipated, and the stools rarely of natural color, clay colored often; blood was sometimes seen, so it was said, but I found none though careful search was made. Temperature normal in the morning, but about one degree higher in the evening. Pulse was never under 116 per minute.

Liver abscess was strongly suspected, and during the following two or three weeks the liver appeared below the ribs while respiratory sounds in the right chest were not heard as low as in the left chest, being replaced by dulness. Pain in the right shoulder was marked, and measurement of right base showed increase compared with left of one-fourth of an inch.

A diagnosis of liver abscess in the concavity of the diaphragm was made, and aspiration advised. Dr. Salzer, who had attended the patient some months previously, met me in consultation, confirmed the diagnosis, and concurred in the proposed treatment.

March 9. I aspirated between the ribs in the anterior axillary line nearly on a level with the nipple, that being the place where the respiratory murmur ceased. I selected this point because near the collection of pus, and I was unwilling to pass a needle for diagnostic purposes through the whole liver thickness. I thought also that the pleural membrane could be disregarded. Nearly a quart of brown, highly characteristic, inodorous pus was withdrawn; the patient's condition was rendered much more comfortable. Improvement was of but short duration, one week later the patient had a well-marked rigor, followed by sweating; the liver descended, the line of respiratory murmur ascended, the pulse 130 per minute, etc. Radical measures were clearly indicated. I chose the peritoneal route rather than between the ribs, as giving more room and better drainage. Present, Drs. Salzer and Martin.

Operation, March 19th, with antiseptic precautions, except the spray, mercuric bichloride being the antiseptic. An incision three inches long was made just below, and parallel to, the right costal cartilages, and carried down to the peritoneum; hemorrhage being arrested, this membrane was opened for a distance of two inches, and the liver exposed; it was not adherent. Slight traction on each lip of the wound caused the edges of the peritoneum to open widely, showing an oval area of liver surface, one by two inches. With a fine needle and silk I sewed by close continuous suture the peritoneum edge and liver surface together. The general cavity of the peritoneum was thus shut off from my wound, and I had a button-hole of extraperitoneal liver, so to say, one by two inches, at my disposal for operation. Pressure by sponge arrested the slight oozing from liver tissue where sewn. An aspirator needle was passed into the exposed liver, and directed toward the abscess; resistance ceased after traversing about three inches of hepatic substance and pus flowed. Using the canula as a guide, the abscess was freely opened, about two quarts of brown pus were evacuated, and the cavity freely irrigated, pressure arrested bleeding from the liver tissue. A large drainage tube

was placed in the wound, and an iodoform gauze dressing adjusted. It was noted that flakes of white pus were mixed with the usual brown liver pus, as though acute inflammation was present, possibly set up by the tapping (?).

The dressings were changed as soiled, and the abscess cavity irrigated. All went well, fever disappeared, pulse became less rapid and more strong, appetite improved. Convalescence was apparently established. Two weeks later pus ceased to appear, perfectly clear bile in large quantity replacing it, and a marked change for the worse was noticed in the patient. The bowels filled with gas, the appetite failed, the tongue became less moist, the complexion mottled and "dirty." I gave dried ox-gall in capsules, with the effect of somewhat improving the symptoms, but it was evident that unless the bile would flow into the intestine my patient's days were numbered. I believed that a large bile duct was opened, possibly by pressure of the drainage tube, so I replaced the large by a small tube, no good resulted. An aseptic condition of the wound was present during the continuance of the biliary flow, and bile, as an antiseptic dressing, naturally suggested itself for future trial.

I then withdrew the tube, dressed with gauze (iodoform), cotton, a bandage, and let matters take their course. In a week discomfort was complained of; so I passed a probe along the track of the tube, allowing reddish-brown pus to escape, but little bile flowed. This was continued every few days for three weeks, when I replaced a drainage tube in the abscess cavity; no bile appeared, and convalescence was definitely established. It is now more than one year since the operation, the patient continues in perfect health, and follows his usual avocation.

CASE II. *Laparotomy; suture of parietal peritoneum to liver; gall-bladder opened through the liver; extraction of calculi; recovery.*—This patient I saw with Dr. George L. Wilkins, whose full notes are appended. The description of operative measures is by my own pen.

It will be seen that the route by which the cavity of the gall-bladder was reached is novel; it remains for the future to show under what circumstances it should be followed.

Mrs. N., aged thirty, married, mother of several children; previous health good; has had, since about the first of August, 1887, frequent attacks which have presented the clinical history due to the passage of biliary calculi. Has had frequent paroxysms of pain, recurring at intervals ranging from one to two weeks, of variable duration, and usually sudden in their onset and disappearance. The pain always started from the right hypochondriac region, extending toward the epigastric region, the right shoulder, and back. Jaundice always followed the attacks of pain. Urine showed the presence of bile, and the feces were clay colored. Vomiting usually followed the attacks, and throughout dyspeptic symptoms predominated. Palpation and percussion showed pain and tumefaction in the right hypochondriac region. Gall-stones were found from time to time in the feces. After exhausting all of the usual measures of treatment, including the so-called bile solvents, and despairing of the life of the patient, operative treatment was proposed and accepted.

Condition on the day of the operation: small, frail woman, considerably emaciated; skin and conjunctiva considerably icteric; pulse 96 and

feeble; temperature 99.6°. In the right hypochondriac region a tumor could be felt which was painful to the touch, movable, its position approaching the median line when patient was placed on her left side, and following the respiratory movements of the liver. Operation performed at 12.45, January 17, 1888, under strict antiseptic precautions, except the spray; room well heated; ether used as anæsthetic.

Operation.—A vertical incision two inches long was made over the induration in the right hypochondriac region. The peritoneum was exposed, and, bleeding being arrested, was opened to the same length as the skin wound. The liver came into view; digital exploration failed to detect the gall-bladder. The incision through the abdominal wall was extended two inches downward, permitting free manual and ocular examination. It was found that the intestines were adherent to the under surface of the liver and to the gall-bladder. This latter viscus, felt through the adherent bowels, appeared to be globular, an inch and a half in diameter, and two or three inches from the edge of the liver. I did not think that if the adhesions were torn through it would be possible to sew the gall-bladder to the skin, so deeply did it lie beneath the liver. I did not make out a stone impacted outside of the gall-bladder. The liver was much enlarged, and the hardness felt through the belly walls corresponded to what I believed to be the situation of the gall-bladder.

I had intended to operate in the usual way draining the bladder externally, but in view of the conditions found, and of the excellent result obtained by stitching the liver and peritoneum together in the abscess case already stated, I operated as follows: A slender hollow needle was passed directly through the liver from above downward into the gall-bladder, on aspirating perfectly clear fluid entered the body of the syringe; I considered that if adhesions prevented the gall-bladder from projecting beyond the liver edge the same adhesions would prevent extravasation into the peritoneal cavity; so I sewed the parietal peritoneum to the upper surface of the liver, making a "buttonhole" 1½ x 2 inches, closing also the rest of the peritoneal incision, and then using the needle, which remained *in situ* as a guide, I cut directly through the thickness of the liver into the gall-bladder. I made the incision of such a size that my finger would fill it. A gush of blood followed the use of the knife, and at once withdrawing it, I thrust my left forefinger into the wound completely arresting hemorrhage; the end of my finger recognized several stones, showing that the sought-for locality was reached. I did not move my finger for three minutes, by which time no hemorrhage followed its withdrawal. I extracted with forceps thirteen calculi, two others seemed to be in or near the duct, these broke in fragments during removal; up to this time no bile was seen, but shortly after the two last stones were withdrawn a green stain was noticed on the sponges. I considered this to indicate that the passage of bile into the bladder hitherto prevented, evidenced by the clear mucus, was now free. A rubber drainage-tube was left in the gall-bladder, and the abdominal wound closed save where the tube passed. Iodoform gauze, cotton, and a bandage completely the dressing.

January 17. 6 P. M., pulse 88; temp. 99.6°. No vomiting or pain. Opium gr. j, every three hours. Fluid nourishment.

18*th*. 12 M., pulse 108; temp. 100.7°. Several slight paroxysms of pain during the night. No vomiting or abdominal tenderness. Urine shows bile. Free discharge of bile through wound. 6 P. M., pulse 100;

temp. 100.5°. No vomiting, pain, or tenderness. Dressing saturated with bile.

19*th*. 11 A. M., pulse 88; temp. 99.5°. No vomiting, pain, etc. Continued discharge of bile through wound. Dressings clean. Discontinued opium. 6 P. M., pulse 84; temp. 99.5°. No vomiting, pain, etc. Regurgitation of small quantity of bile per mouth.

20*th*. 11 A. M., pulse 88; temp. 98.5°. Dressing only slightly soiled. 5 P. M., pulse 82; temp. 100°.

21*st*. 12 M., pulse 100; temp. 99.5°. Depressed, anxious countenance. During the night of the 20th several chills followed by bilious vomiting; urine free and contains bile. No abdominal tenderness, pain, or tympanites. Dressing slightly soiled by bile and blood. No odor. Drainage tube removed. Ordered calomel and brandy. 6 P. M., pulse 112; temp. 99°. Vomited once since morning. Continued restlessness.

22*d*. 9 A.M., pulse 110; temp. 100°. No vomiting or pain. Since last evening the operations showing presence of bile. Urine assuming a lighter color. Jaundice disappearing. Quinine, two grains every second hour.

23*d*. 10 A.M., pulse 108; temp. 100°. 5 P.M., pulse 92; temp. 99°. No vomiting, etc.

24*th*. 10 A.M., pulse 92; temp. 99°. 5 P.M., pulse 84; temp. 98.6°. Daily bilious operations.

25*th*. 1 P.M., pulse 84; temp. 99°. Cheerful. No pain or vomiting. Two operations of greenish-yellow color. Discharge from wound healthy. Continued quinine.

26*th*. 11 A.M., pulse 78; temp. 98.5°. No pain or vomiting. Two bilious operations. Discharge through wound of viscid mucus slightly tinged with bile.

27*th*. 11 A.M., pulse 76; temp. 98.5°. No pain, etc. Operation showing presence of bile.

28*th*. Pulse 72; temp. 98.5°. No operation, vomiting, or pain. Night of January 27th, profuse sweating followed by chill. Discharge through wound of viscid mucus and bile.

30*th*. Pulse 78; temp. 99°. Free discharge of bile through fistulous opening. Ordered small doses of mag. sulph. to secure daily movement of the bowels.

31*st*. Pulse 78; temp. 98.8°. Feces show presence of free bile. Urine free from bile. Dressings soiled with bile. Jaundice almost entirely gone. Pain, tenderness and slight enlargement of parotid gland on left side.

February 2. 12 M., pulse 78; temp. 98.5°. Dressings slightly tinged with bile. Daily movement of bowels, feces loaded with bile. Urine normal. Pain and tenderness of parotid gland subsiding. Patient cheerful and bright. Removed sutures. Perfect union of incision except small fistulous opening.

4*th*. Pulse 72; temp. 98.5°. No discharge through wound. Free bilious evacuations. Pain in parotid gland almost entirely gone.

17*th*. Pulse 78; temp. 98.5°. Perfect union of wound.

24*th*. No jaundice. Improved in flesh and strength. Gradually resuming her household duties. No pain or enlargement in right hypochondriac region, etc.

The above cases seem clearly to indicate that liver hemorrhage, so much dreaded hitherto, is amenable to pressure applied directly upon

the bleeding surface, in that regard resembling the kidney, the subject of so much brilliant surgery within the past few years.

The method adopted of opening the parietal peritoneum, separating the edges, and sewing them to the liver, shuts off a corresponding area of that viscus from the general peritoneal cavity, and exposes it to the surgeon for treatment as any other external surface of the body. In stab or gunshot wounds of the liver, it is easy to see how this procedure affords a means of arresting hemorrhage, and provides a method of continuous drainage; so also in contusion or crush of the liver, and other pathological conditions not necessary to enumerate. So easy is the operation of performance, and so rapidly is a portion of the liver rendered extraperitoneal that it may even be of use as a diagnostic measure.

REPORT OF THIRTY-ONE CASES OF HEAT FEVER TREATED AT THE PENNSYLVANIA HOSPITAL DURING THE SUMMER OF 1887.

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In reporting the following cases of heat fever, I desire to acknowledge the courtesy of my former chief, Dr. James H. Hutchinson, in permitting me to publish them, and to state that no claim is made to any novelty in the matter of treatment, but that my object is simply to present the cases in tabulated form with the chief symptoms exhibited. Some endeavor has been made to determine, if possible, the predisposing and exciting causes of the attack, and to learn the present physical condition of so many of the cases as could be reached personally or by letter.

This summary of cases does not include those treated on the female side of the house.

A few of the cases are reported somewhat more in detail, not only to indicate more readily the general mode of treatment adopted, but also to bring out some features in these cases of more than usual interest.

Except in Cases I., II., IV., V., and VI. the temperature was taken in the rectum, as being a more definite index, and because the process of cooling the body manifestly interfered with the value of the cutaneous temperature as a register of the body heat.

The cases were all treated under a canvas roof, covering over a portion of the hospital yard. This was found to be a great convenience, and of benefit both to patients and attendants. As the yard is paved with artificial stone, and could consequently be kept cool by liberal use of the

hose, there was a much less impeded circulation of air under the canvas than could have been obtained in a ward, and the cases were removed from the unavoidable bustle and constant motion present in the general receiving ward. Adding to this the fact that practically no time at all elapsed between their arrival in ambulance or police patrol wagon and the institution of treatment, the advantages of the temporary ward are apparent.

Almost without exception the cases were brought to the hospital either on the hospital ambulance or on the police patrol wagons, and were usually rubbed with ice on the way up to the hospital. The patrol crews soon learned how to diagnose and temporarily to treat sunstroke, and on only one occasion was a patient rubbed with ice who was not a fit subject for such treatment. This preliminary icing undoubtedly was of value to the patients as saving time, and it probably kept the temperature record in the cases at a lower average than it would otherwise have attained.

As soon as a patient with heat fever was brought to the hospital he was placed on a waterproof fracture-bed, his clothing removed as rapidly as possible, a thermometer introduced into the rectum, and ice packed about the body and extremities. Usually at the outset, ♏ xv or xx of tr. digitalis were administered hypodermatically. The thermometer was removed every seven minutes, the icing being continued until the rectal temperature fell to 104° F. The patient was then dried and put on a clean bed, with an ice-cap to his head, and in favorable cases the temperature gradually fell to normal. It was found that, if the icing were continued after the rectal temperature had fallen below 104° F., there was apt to be too rapid and great a fall, so that the application of external heat and free stimulation were required—a state of affairs certainly undesirable.

The above is an outline of the general mode of treatment adopted in the cases with temperature exceeding 106⅘° F. Those cases with a temperature below that point were stripped and liberally sponged with a mixture of one part of alcohol and four parts of iced water, an ice-cap being applied to the head. If the temperature were not above 106° F., this was always found to be sufficiently active treatment. Subsequent elevations of temperature occurring after primary reduction were treated after the manner indicated above. In but a few cases were any other antipyretic measures adopted.

Other means of treatment were employed to meet individual symptoms in various cases. Where convulsions were present after the temperature had been lowered to a considerable extent, morphia was employed, usually with good effect. In the favorable cases respiration and pulse both improved in character with the fall of temperature, but, if they did not do so, bleeding was employed in spite of the feeble pulse, and was almost

TABLE OF CASES.

Number of case.	Age.	Nativity and Occupation.	Habits.	Date and time of admission.	Cause.	Time of onset of symptoms.	Temperature on admission.	Cerebral condition.	State of pupils.
1	40	Hungarian laborer	Unknown	June 21 3.30 p. m.	Sun	2.45 p. m.	103.4°F	Partially conscious	Natural
2	59	Ireland laborer	Unknown	June 21 1 p. m.	Sun	12.30 p. m.	103.4	Unconscious	Contracted
3	50	Switzerland waiter	Intemperate	July 1 9.45 p. m.	Heat	9.25 p. m.	112	Comatose	Contracted
4	33	Ireland coal heaver	Moderate drinker	July 7 3 p. m.	Sun	2.15 p. m.	102	Partially conscious	Natural
5	68	Ireland printer	Moderate	July 9 2.50 a. m.	Heat	2.20 a. m.	108	Unconscious	Contracted
6	23	Philadelphia baker	Unknown	July 9 6 a. m.	Heat	5.40 a. m.	108	Unconscious	Contracted
7	63	Ireland laborer	Moderate	July 16 2.20 p. m.	Sun	Shortly before admission	108	Unconscious	Contracted
8	22	Ireland baker	Moderate	July 16 12 m.	Heat and sun	Shortly before admission	110	Comatose	Contracted
9	?	? baker	Unknown	July 17 9.10 p. m.	Heat	Shortly before admission	110	Comatose	Contracted
10	44	Germany baker	Unknown	July 18 2.15 a. m.	Heat	Shortly before admission	110	Comatose	Contracted
11	40	Germany sugar refiner	Unknown	July 18 12 m.	Heat	Shortly before admission	110	Unconscious	Contracted
12	62	Ireland laborer	Hard drinker	July 18 5 p. m.	Unknown.	Shortly before admission	106	Conscious	Sluggish
13	29	Ireland teamster	Hard drinker	July 18 12.30 p. m.	Sun	Shortly before admission	110	Unconscious	Contracted
14	21	Scotland unknown	Unknown	July 18 11.30 a. m.	Sun	Shortly before admission	111	Unconscious	Contracted
15	22	Ireland iron founder	Temperate	July 18 7 p. m.	Sun	Shortly before admission	106	Conscious and delirious	Natural
16	22	Ireland street paver	Intemperate	July 18 5 p. m.	Sun	Shortly before admission	105	Conscious and delirious	Natural
17	39	England carpenter	Hard drinker	July 18 7.30 p. m	Sun	8–10 hours before admission	100	Conscious and dull.	Slightly contracted
18	37	England laborer in street	Hard drinker	July 18 9.30 p. m.	Sun	2 p. m.	110	Unconscious	Dilated
19	21	Ireland street paver	Unknown	July 27 4 p. m.	Sun	Shortly before admission	106.4	Delirious	Contracted
20	37	Germany sugar refiner	Unknown	July 28 12.30 p. m.	Heat	Shortly before admission	106	Semi-conscious	Contracted
21	20	Newfoundland hat finisher	Unknown	July 29 12.45 p. m.	Heat	Shortly before admission	106	Semi-conscious	Natural
22	36	Philadelphia roofer	Moderate	July 29 7.45 p. m.	Sun	Several hours	101	Dull but conscious	Natural
23	60	Ireland laborer	Unknown	July 30 9.45 a. m.	Sun	Shortly before admission	108.2	Unconscious	Contracted
24	80	Germany farmer	Unknown	July 30 12.30 p. m.	Sun	Shortly before admission	106.2	Conscious	Contracted
25	28	Ireland brick-maker	Unknown	July 30 4.30 p. m.	Sun	Shortly before admission	109.2	Unconscious	Contracted
26	22	Scotland, grocer	Unknown	July 30 12.30 p. m.	Sun	Shortly before admission	109	Unconscious	Contracted
27	50	Ireland book-keeper	Hard drinker	July 30 5.30 p. m.	Heat	One hour before.	110	Unconscious	Contracted
28	45	Germany sugar refinar	Unknown	July 31 3.30 a. m.	Heat	Some time before admission	108	Unconscious	Contracted
29	35	Ireland driver	Hard drinker	July 31 3.30 p. m.	Sun	Shortly before admission	109	Unconscious	Contracted
30	26	Ireland laborer	Unknown	July 31 11.45 p. m.	Sun	Prodromes for 3 days, unconscious for 7¾ hours before admission	109	Unconscious	Contracted
31	26	Philadelphia liquor dealer	Temperate (?)	Aug. 1 3.45 p. m.	Sun	Shortly before admission	109	Unconscious	Contracted

Table of Cases.

Convulsions.	Pulse.	Respiration	Diarrhœa	Treatment.	Effect on temperature	Subsequent rise in temperature	Result	Time and cause of death.
Slight	Full and bounding	Rapid	Absent	Sponging	100° in 10 min.	None	Cure	
None	Full and bounding	Noisy	Present	Sponging.	100° in 15 min.	None	Cure	
Marked	Full and bounding	Stertorous	Present	Ice bath	99° in 2¾ hrs	109° at 4 a. m.	Death	15 hours after admission, cerebral and pulmonary congestion.
None	Full and strong	Grunting	Absent	Sponging.	100° shortly	None	Cure	
None	Rapid and compressible.	Stertorous	Present	Iced	101° in 30 min.	None	Cure	
None	Full and bounding	Stertorous	Present	Iced	101° in 20 min.	None	Cure	
None	Weak	Puffing	Absent	Iced	99° in 55 min.	102.6° at 5.40p.m.	Cure	
None	Pulseless at wrist	Stertorous	Present	Iced	96°	105° at 4.45p.m.	Cure	
Marked	Pulseless at wrist	Stertorous	Absent	Iced	101° in 1½ hrs.	109° in 2 hrs.	Death	5½ hours after admission, cardiac and respiratory failure
Absent	Pulseless at wrist	Stertorous	Present	Iced	105° in 20 min.	Slight	Death	10 hours after admission, cardiac and respiratory failure.
Present	Very weak	Stertorous	Present	Iced	104° shortly	Slight	Death	8 days after admission, from cholæmia
Slight	Poor	Hurried	Present	Iced	102° in 10 min.	None	Cure	
Marked	Very feeble	Labored	Present	Iced	104° in 15 min	108° at 8 p. m.	Death	34½ hrs. after admission from exhaustion caused by delirium tremens.
Absent	Pulseless	Gasping	Absent	Iced	None	.....	Death	
Absent	Full and bounding	Hurried	Absent	Sponged	101° shortly	None	Cure	
Absent	Full and strong	Hurried	Absent	Sponged	98 4° shortly	None	Cure	
Absent	Natural	Natural	Absent	Ice cap	.....	None	Cure	
Present	Pulseless at wrist	Stertorous	Present	Iced	104° in 20 min.	106° at 11.30 p. m. July 19	Death	3 days after admission from meningitis.
Absent	Full and bounding	Hurried	Absent	Sponged	103.8° in 10 min.	None	Cure	
Absent	Bounding	Noisy	Absent	Sponged	102.6° in 10 min.	None	Cure	
Absent	Bounding	Rapid	Absent	Sponged	101° shortly	None	Cure	
Absent	Full and rapid	Quiet	Absent	Ice cap	None	None	Cure	
Absent	Pulseless at wrist	Stertorous	Present	Iced	102° in 15 min.	None	Cure	
Absent	Rapid	Grunting	Absent	Sponged	101° shortly	None	Cure	
Absent	Pulseless at wrist	Stertorous	Absent	Iced	104° shortly	None	Death	3 hours after admission from emphysema of larynx.
Absent	Pulseless at wrist	Shallow and noisy	Absent	Iced	104.4° in 5 min.	None	Cure	
Absent	Pulseless at wrist	Stertorous	Present	Iced	103° at 6.30p.m.	106° at 8.30a m 106° at 4.30p.m.	Death	15 hours after admission from œdema of lungs.
Present	Pulseless at wrist	Stertorous	Present	Iced	104° in 30 min.	None	Death	5½ hours after admission from cardiac and respiratory failure.
Absent	Pulseless at wrist	Noisy	Present	Iced	99° shortly	None	Death	2¾ hours after admission following delirium.
Absent	Almost pulseless	Stertorous	Absent	Iced	104° in 15 min.	106° at 2.30p m.	Death	11¾ hours after admission from failure of respiration.
Absent	Very weak	Stertorous	Absent	.....	103.4° in 20 min.	None	Cure	

invariably followed by quieter, fuller respirations, with a soft, steady pulse.

A word in regard to the use of bleeding. When the face was congested or livid, the capillary circulation over the whole body obstructed, the heart, as determined by auscultation, laboring to force the blood around the vascular circle, the breathing shallow and stertorous, the contracted pupils with other evidences of obstructed venous circulation in the brain present, the evident indication was to empty the overloaded veins of the blood that was stagnating in them and so embarrassing both respiration and circulation. Wet-cupping behind the ears was always first tried, but it was in almost every case impossible to withdraw more than a few thick black drops of intensely altered blood, even when crucial incisions with a bistoury were added to the smaller incisions of the scarificator. In no case where it was attempted could enough blood be withdrawn by this means to affect either the general or cerebral circulation. Bleeding from the median basilic vein was then, if deemed necessary, employed, and even with this free outlet the blood did not flow, but had to be squeezed up from the hand, issuing then in thick, black jets and ceasing so soon as upward pressure with the hand was discontinued. After the withdrawal by this means of from twelve to sixteen ounces of blood there was usually marked improvement in circulation, respiration, and color, with, in some cases, complete or partial return of consciousness.

I regret very much that there was not time to make a somewhat more extended study of some of the conditions present, as by ophthalmoscopic examination of eye-grounds, and by examination of the blood, urine, and stools. The blood has received careful study at other hands, but I should have desired to examine the urine and fecal discharges, in order if possible to determine to what extent the high temperature had affected the kidneys and intestinal canal with its related glands.

For lack of time, owing to the rapid succession of the cases, I was also unable to keep as full records as I should have desired.

Taking up each heading of the preceding table in order, it will be seen that the youngest patient was twenty years of age, the oldest eighty, the decade containing the greatest number being that between twenty and thirty years, in which there were 10 cases. All of the patients received were white. There were native of Ireland 15, of Germany 5, of the United States 3, of Scotland and England each 2, of Hungaria, Switzerland, and Newfoundland, each 1.

By occupation there were 5 laborers, 4 bakers, 3 street pavers, and 3 workers in a sugar refinery. All of these are typical occupations for the production of heat fever. There were, however, others engaged in occupations ordinarily deemed safe so far as exposure to excessive heat is concerned, markedly seen in Case III., who was a waiter in a most comfortable club-room without exposure to other causes than the warmth

of the dining-room and his exertions at waiting (but he was a native of Switzerland and had been but a short time in this country).

In regard to the alcoholic habit accuracy is impossible, but 11 confessed (or it was confessed for them) that they were hard drinkers, 2 denied any use of alcohol, while in 18 the point could not be ascertained.

More cases were received on July 18th than on any other day, the number being 9, the next in order being July 30th, on which 3 cases were received, the next July 31st, on which day there were admitted 3 cases.

The following table of the thermometer and barometer readings, with the accompanying remarks on the weather on the days when the cases were received, is taken from the register of the hospital, and represents a fair mean of the two over most parts of the city. The thermometer reading is always in the shade.

Date.	Thermometer.		Barometer.			Remarks.
	Max.	Min.	8 a. m.	2 p. m.	8 p. m.	
June 21, 1887	92°	70°	30.14	30.09	30.03	Mostly clear; thunderstorm at night.
July 1, "	91.5	67	30.40	30.34	30.30	Clear.
July 7, "	90	74	30.19	30 10	30.09	Clear, and later cloudy.
July 9, "	80	72	30.09	30.05	30.00	Cloudy; light shower in afternoon.
July 16, "	100.5	71	30.23	.....	30.08	Clear.
July 17, "	95.5	76.5	30.14	30.10	30.08	Partly clear and cloudy.
July 18, "	96	77.5	30.07	30.05	30.09	Clear.
July 27, "	89	72	30.25	30.21	30 20	Partly clear and cloudy.
July 28, "	90	72	30.26	30.19	30.17	Mostly clear.
July 29, "	91	73	30.22	30.18	30.18	Mostly clear.
July 30, "	90.5	75.5	30.26	30.21	30.20	Thunderstorm and rain in afternoon and evening.
July 31, "	93	75	30 21	30.13	30.17	Thunderstorm at night.
Aug. 1, "	87.5	72	30.20	30.14	30.14	Mostly cloudy.

The greatest number of cases was admitted between noon and 6 P.M., being 16 out of 31; 3, however, were admitted between midnight and 6 A. M., all of them being engaged in highly heated apartments.

In 19 of the cases the heat producing the attack was solar, in 11 it was artificial, while in 2 both factors were at work.

As will be seen by reference to the table, the length of time elapsing between the onset of symptoms and admission to the hospital was a manifest factor in determining the effect of treatment.

The highest temperature attained was 112° F., more of the cases having temperatures of 110°–111°, than between any other two degrees.

20 of the cases were unconscious, 8 were conscious, 3 were partially

conscious, while 4 were wildly delirious (this does not include those who became delirious on passing out of coma on the reduction of temperature). Consciousness was maintained in every case where the temperature was below 108° F., except in Case II., where the temperature was but 103⅘° F., the patient, however, soon recovering consciousness.

The pupils in 24 of the cases were extremely contracted, in 5 they were natural, in 1 they were sluggish, while in 1 they were dilated. Where the pupils were contracted there was also present unconsciousness except in 3 cases, and in these the temperature was 106° or over. The case in which the pupils were dilated is presented more in detail below. Convulsions occurred in but 6 cases, while partial convulsions occurred in 2. In none were the convulsions truly epileptiform, but usually consisted in tonic contraction with rapid clonic spasms, at intervals much intensified. The presence of convulsions always indicated a greater degree of gravity. In one case (XI.) a tetanoid condition was persistent for some time after return to consciousness and subsidence of other symptoms.

The state of the pulse varied much in the different cases, being almost invariably absent at the wrist where the temperature reached 108° F. or over, and being changed from the normal in direct ratio with the severity of the other symptoms.

Respiration, as would have been expected, with the moderately elevated temperatures was accelerated, with the higher temperatures varying from noisy and rattling to typically stertorous. The respirations in Case XIV. were gasping from impending dissolution. No cases presented Cheyne-Stokes respiration, although a few of the worst cases showed some intermitting of respiration in part of their course. Almost all of the fatal cases presented signs of intense pulmonary congestion.

The color of the face varied from flushed, in the lighter cases, to livid and mottled in the cases with marked alteration in respiration and circulation. The tendency to mottling, almost petechial in character, was very frequently seen, being intensified by the direct application of ice.

Diarrhœa (*i. e.*, involuntary evacuation of liquid offensive stools with greenish-brown flocculi) was present in many of the cases having much elevation of temperature, and presented the typical mousy, repulsive odor described by many authors.

The characteristic penetrating odor (irrespective of that due to feces) was present in all but one of the cases whose temperature reached 108° F.

The longest time required to reduce the temperature to within safe limits was one hour, the average time being from ten to fifteen minutes. The result of the case could almost be predicted by the facility or difficulty experienced in reducing the temperature.

In 12 cases subsequent rise of temperature occurred, in a few several spongings with alcohol and iced water being required before the temperature became permanently reduced.

The mortality in the whole series was 12 out of 31, including the case (XIV.) that died almost immediately after admission, one which proved fatal several days later through cholæmia, and one that died of meningitis. It also includes two cases of consecutive delirium tremens, although one of these cases (No. XXIX.) died within so short a time after the development of his delirium that it is only fair to call it a death from sunstroke.

The manner of death was, as a rule, by almost simultaneous cardiac and respiratory failure. The lowest initial temperature followed by death was 108° F.

Case II.—On the morning after his admission to the hospital remembered nothing concerning his condition or surroundings from the time "when the sun felt hot" until he awoke on the next morning at the hospital. He had been overcome by the heat on two or three previous occasions, one of his attacks resembling, so far as he could judge, the present one.

Case III.—H. M., æt. fifty, waiter in a private club. Born in Switzerland. Was but a short time in America, having lived for the past few years in England. He was brought to the hospital in the ambulance at 9.45 P. M., having fallen unconscious while waiting at table. He was, when seen, unconscious, with stertorous breathing, pulseless at wrist, with contracted pupils, livid and blotchy facial appearance, and presented the typical mousy odor, together with that due to a profuse semi-liquid bowel movement. The thermometer in the rectum registered 112° F. He was put in an iced-water bath, and was kept in it for about forty-five minutes, at which time his temperature had fallen to 101° F. in the rectum. No change, apart from the reduction of temperature, was appreciable as a result of treatment. Tr. digitalis was freely administered hypodermatically, without any marked improvement of circulation. At 1 A. M. f℥iij of blood were with great difficulty withdrawn by cut-cupping over the right mastoid. His temperature dropped to subnormal and remained so until 2 A. M., when it rapidly rose to 104° F. He was then given an enema containing acetanilide grs. viij. The seemed to have slight, if any effect, the fever rising steadily until his death at 4 A. M., his temperature shortly before that time having reached 109° F. in the axilla.

Case VIII.—Wm. McC., white, æt. twenty-two, native of Ireland, having been in this country for fifteen months. Until shortly before his attack he had been keeping books, but for the previous two or three days had been working in a bakery. An attack of diarrhœa began one week before his admission to the hospital, reducing his strength considerably. On the morning of his admission he left the bake-house on account of his sufferings from the necessarily high temperature, and while walking along the street fell unconscious. He was sponged about the face and chest with iced water, by a physician, for about a half hour before the ambulance was summoned. On reaching him he was absolutely unconscious and relaxed, lying in a pool of vomited material,

his face livid and mottled, lips blue, respiration stertorous. On the road to the hospital he was stripped and rubbed with a block of ice. After his arrival at the hospital the usual treatment was adopted, the rectal temperature reaching 110° F. after five minutes of icing. This was at 11.50 A.M. While on the rubber bed he had two profuse characteristic movements of the bowels.

On his admission he was pulseless at the wrist, this condition not being affected by tr. digitalis ♏xxx, hypodermatically. Icing was continued until 12.30 P.M. (forty minutes), when his rectal temperature reached 104⅘° F. He was then put in a dry bed, and an ice cap applied to his head. His temperature shortly fell to 93° F. in axilla, 96° F. in rectum; on which account external heat and stimulation were employed. His breathing had improved, but he was still unconscious with contracted pupils and small pulse. At 2.40 P.M. the axillary temperature reached 99⅘° F., and the external heat was withdrawn. At 3.20 P.M. he opened his eyes, coughed and vomited, these being the first signs of returning consciousness exhibited. He soon went through a series of fantastic voluntary movements, but could not be made to answer questions. At 3.45 P.M. he gave his name and address. His temperature rising rapidly, at 4 P.M. he was given acetanilide, grs. vj, by mouth. At 4.50 P.M. his temperature having risen to 105° in the axilla, he was sponged with alcohol one part and iced water four parts. This process of sponging had to be twice repeated, the last time being at 8 P.M. He slept somewhat through the night, his temperature ranging from 99° to 100° F. Catheterization had to be employed but once.

The note of his condition on the next day (July 17th) states that it was favorable, but that there had appeared through the night several purpuric spots on the abdomen and arms.

Nothing of note occurred thereafter until his discharge, except that on the evening of July 20th he became somewhat delirious, but soon became rational again, and that for a while he suffered from slight vertical headache. His mental acumen was not very marked during his residence in the hospital, but had probably never been very highly developed. [This case was heard from lately, and states that since his attack he has had impairment of both memory and eyesight. He did not keep his promise to return for further examination.]

CASE IX. was one of the worst of the series. There was profuse discharge of dark, thick blood from the nostrils, there were severe long-continuing convulsions, uncontrollable by morphia or musk, and his temperature persistently rose so soon as treatment by icing was discontinued for more than a few minutes. He had been iced on the way up to the hospital on the police patrol wagon.

CASE X.—This case, beside the cerebral symptoms, showed very marked disturbance of respiration. For ten minutes before death actually occurred artificial respiration was practised, the heart sounds being meanwhile feebly audible. On the cessation of cardiac action a hypodermatic needle was thrust into the heart, and twenty minims of aromatic spirits of ammonia injected. This aroused two or three barely audible fluttering contractions preceding final arrest.

CASE XI. was brought to the hospital on the ambulance at 12 noon of July 18th, having been working in a sugar refinery, where he had fallen unconscious. He was rubbed with ice at the refinery, and this was continued on the ambulance. He was a native of Germany,

having been but a short time in this country. On admission, he was unconscious, with minutely contracted pupils, stertorous breathing, feeble pulse, hot, dry skin, and a rectal temperature of 111° F. The flexor muscles of his extremities were in a state of tetanic contraction. He was rubbed with ice until his rectal temperature fell to 104° F. He was then put on a dry bed and an ice cap applied. There still persisted the tetanoid condition, with which his facial expression was in keeping. In addition to the tonic contraction there were occasional slightly marked clonic spasms. The symptoms shortly passed off, the tetanoid condition being persistent even after partial return to consciousness. On the next day his general condition was favorable, but the tongue was much coated, and he complained of a slight amount of lightness in his head. During the night of July 20th he had diarrhœa, and on the morning of the 21st jaundice declared itself. He was given calomel in fractional doses, with bismuth. The urine was examined on that day, and the following conditions were noted: Amber in color, very cloudy, and frothing freely when shaken, very acid, specific gravity 1019, albumin (about $\frac{1}{4}$), no sugar. Microscopic examination of the sediment revealed numbers of granular cells from kidney and bladder, with coarse granular casts.

On the 22d, the jaundice became more marked, contraction of the pupils, slight retraction of the head, and drowsiness being superadded. On the 23d, hiccough appeared, which was finally controlled by a suppository containing seven grains of musk. On the 24th, his condition was slightly better, but the jaundice was steadily increasing. The first signs of ptyalism having appeared, small doses of taraxacum were substituted for the calomel. Dry cupping and poultices were freely used over the hepatic region, with no apparent benefit. The jaundice steadily increased, and after stupor for a period of about twenty-four hours, death occurred.

Post-mortem held four hours after death, revealed marked staining of all the tissues with bile, slight opacity of arachnoid and pia mater, marked enlargement of the liver, with swelling of the parenchyma, which was of a peculiar grayish color, great congestion and swelling of the kidneys. The blood was fluid.

Case XIII. had been on a debauch for two weeks up to the night before his attack. He presented the symptoms of a grave case of heat fever, being constantly in a mildly convulsed state. This condition of convulsion continuing after the reduction of temperature, cut-cupping behind the ear was attempted, but failed. Fourteen ounces of blood were then *pushed* out of the median basilic vein. The effect of this measure was almost startling. The cyanosed face became clear, the embarrassed breathing fuller, and the pulse became not only perceptible but soft and steady. Consciousness also returned, and it was hoped that recovery would ensue, but delirium supervened upon a period of quiet sleep, and physical restraint became necessary. The temperature rose three times after the first reduction, the last rise being to 108° F. at 8 P.M. on the night before death, which occurred at 11 P.M. July 19th, his condition during the whole of that day being that of a typical violent subject of delirium tremens. (On the day of admission examination of the urine showed it to be amber-colored, clear, very acid, of a specific gravity of 1017, and containing about one-sixth of albumen, with a large urate sediment. The specimen, unfortunately, soon became decomposed,

and when microscopical examination was attempted the whole field was occupied by microörganisms.)

Case XIV. died during the act of vomiting, almost immediately after admission, and before treatment could be instituted, the thermometer by actual count, having been in the rectum five minutes, and even then registering 111° F.

Case XVII was a relic. Having been drinking hard for two or three weeks, he, on the morning of the day of his admission, fell unconscious, and was treated by a physician "secundum artem," as a case of sunstroke. The patient's son stated that the physician told them that his father's temperature was 110°. This, of course, is unreliable information.

Case XVIII. was an Englishman, being a recent immigrant. His previous occupation was that of a clerk, but, having lost his position through his intemperate habits, he had been working for several days in digging a deep trench in the street. He had been much depressed mentally for several days. and had been drinking very freely every night, according to his wife's statement. On the morning of July 18th he was working in the trench until 2 P.M., when he became unconscious, and was removed to his home, where a physician saw him and prescribed rubbing with ice. From lack of assistance his wife soon had to cease working with him, and at 9.30 P.M. he was brought to the hospital in the ambulance. His condition was noted at that time as follows: Unconscious, with stertorous breathing, flushed face, hot and dry skin; rectal temperature 110° F.; arms, forearms, wrist, and fingers, strongly flexed, and toes pointed and rigid; muscles of back and neck strongly contracted; pupils *dilated* and equal, retinal and conjunctival reflexes preserved. He was rubbed with ice, but no improvement followed the reduction of temperature. The temperature remained at 102° F., or over, during the whole course of the case, with a rise to 106° F. twenty-six hours after admission. On the 20th, the pupils became contracted, and inunctions of mercury were given. He lay in a state of coma, with rigid flexion as described above, until his death at 8 A.M., July 22d (four days after admission).

Post-mortem held six hours after death. There was moderate rigor mortis, and marked superficial hypostatic congestion. The veins of the spinal dura and pia were full of dark blood, and the substance of the cervical cord was congested. The membranes of the brain were much congested with an area of hemorrhage beneath the pia mater at the base over the pons and posterior perforated space. The arachnoid and pia were opaque, with white lines streaking the latter. Nothing was revealed by section of the brain substance. The liver was large, soft, and pale, the kidneys large, with swollen parenchyma, and the spleen large, moderately soft, and of a grayish-red color.

Cases XIX., XX., XXI., and XXIII. had been rubbed with ice on the way to the hospital.

Case XXII. was a relic. He was putting on a tin roof when, early in the afternoon, he became unconscious and was treated by Dr. Malatesta, who has kindly given me a brief account of the case prior to his admission to the hospital. His temperature was 106⅘° F. when first seen by Dr. Malatesta. He was unconscious, and presented other symptoms of heat fever. He was rubbed with ice until consciousness returned, when it was deemed advisable to remove him to the hospital. On his

admission he was in precisely the condition of one recovering from a moderately severe attack of heat fever.

Case XXV. had been but a short time in this country; when attacked he was working in a brick-yard. He presented the usual symptoms of a bad case of heat fever, the rectal temperature being 109½° F. The temperature was reduced without much difficulty. His symptoms, apart from the excessive heat, remaining unaltered, he was bled from the median basilic vein to the extent of twelve ounces, with marked improvement of the pulse, but no amelioration of his other symptoms. Two and a half hours after admission he developed cellular emphysema, first evidenced by puffiness of the left eyelid, but soon spreading to face, neck, and chest, with rapid involvement of the larynx, which produced fatal asphyxia before the trachea could be opened. No cause could be found for the development of this complication, although an autopsy might have given an explanation.

Case XXVI. was one in which recovery occurred without a single flaw in the regular and orderly recession of symptoms, and forcibly points to the fact that high body heat alone is capable of producing all of the phenomena of the disease, since with the lowering of temperature all symptoms vanished.

Case XXVII. is of interest from the fact that he had been sunstruck previously, in 1862. He was employed as a bookkeeper, his place of business being in a small room at the top of a high building. He had been for a long time a hard drinker, having for the previous two weeks been on a prolonged debauch. Early on the morning of admission he complained of feeling ill, but did not become unconscious until 4.30 P. M. At 5.30 P.M. he was brought to the hospital on the police patrol wagon, having been rubbed with ice on the way. He was a large, fat man, and on admission presented the symptoms of a grave case of heat fever, the thermometer in the rectum registering 110° F. after ten minutes of icing. Tr. digitalis, ℥xv, with whiskey, hypodermatically were immediately given and icing was begun. At 6.30 P. M. icing was, for the first time, stopped, the rectal temperature at that time having reached 103° F.

After an hour and a half of practically fruitless work, his condition differing from that present before treatment was instituted only in the matter of temperature, cut-cupping over the mastoid was attempted, but only a few ounces of blood could be in this way withdrawn, and those only with the exercise of considerable patience. His breathing being extremely embarrassed, a large mustard poultice was applied over the chest and abdomen. Stimulants during the whole of this time were freely employed (chiefly in the form of carbonate of ammonium by suppository), the response to their action being very tardy. At 11.30 P. M. sixteen ounces of blood were abstracted from the median basilic vein. This steadied and strengthened the pulse, while the coma was somewhat alleviated and the pupils relaxed to a trifling extent. Respiration being much embarrassed—in part by the large amount of sero-sanguinolent material filling the air cells and occasionally welling out through the mouth and nose—he was given atropia sulph. gr. $\frac{1}{60}$, and cocain-hydrochlorat. gr. ½, hypodermatically. This markedly improved the respirations, and in a short time produced almost complete disappearance of the bubbling, moist râles previously heard over the whole chest. At 3.30 A. M., and again at 4.30 A. M., his temperature reached 106° F., on

each occasion being reduced by icing. His heart gradually failed in spite of free stimulation until his death at 8.30 A. M., July 31st.

CASE XXVIII. had been for a long time rubbed with ice at the sugar refinery by a physician who stated that his temperature had been very much higher when he first saw him.

CASE XXIX. was a peculiar one. He was treated in the routine manner by icing, but was given in addition antipyrin, gr. xx, hypodermatically, with apparently good effect. After reduction of his temperature to 99° F., the pupils dilated somewhat, he became conscious, and, on questioning, said that he felt better. In a few minutes after that, he went into a typical condition of delirium tremens, shouting to his horses, etc. He was given potas. bromid., gr. xl, by rectum, without much effect, the delirium persisting until his death, from exhaustion, at 6.15 P. M. (two hours and forty-five minutes after his admission to the hospital).

CASE XXX. was brought to the hospital in the ambulance at 11.45 P. M., July 31st, seven and three-quarters hours after the occurrence of unconsciousness. His friends stated that his skin had been hot for the previous three days, and that on the third day before admission he had been unconscious for an uncertain but marked length of time. He presented the symptoms of marked heat fever, and received the usual treatment. In twenty-five minutes the rectal temperature reached 104° F. No effect on consciousness or respiration occurred coincidently with this reduction, but the pulse responded fairly well to stimulants. Through the night and following morning he remained unconscious with embarrassed respiration and contracted pupils, but at 11 A. M. (August 1st) he suddenly stopped breathing. Artificial respiration by the Sylvester method was practised for twenty-five minutes, the heart meanwhile being kept at work by repeated hypodermatics of ammonia and whiskey. At the end of that time cardiac action ceased.

CASE XXXI. resembled Case XXVI. in that nothing in the way of treatment was required beside the application of cold, except one hypodermatic injection of ten minims of tr. digitalis.

A word more in regard to the cause of death. The autopsies in Cases XI. and XVIII. showed marked parenchymatous changes of an acute character in the kidneys and liver. It is much to be regretted that, owing to the rapid succession of cases and to the difficulty in procuring permission from the coroner, but two autopsies could be made. It is, however, a fair deduction from the symptoms presented during life, that after death universal organic changes would have been found in the various organs as a result of the high temperature in the other cases.

No one organ or system could be named as the one solely responsible in itself for the symptoms produced or the death that occurred; even in Case XI. the liver being chiefly involved, but with heart and kidneys seriously altered in structure.

Death might, therefore, be stated to have been in most cases produced by a combination of the following causes: cerebral congestion, uræmia, marked alteration of the blood interfering with the due performance of its physiological functions, venous stagnation (in part resulting from

blood changes and in part from cardiac failure), respiratory and cardiac failure; the prime cause, of course, being the excessive amount of body heat, the others depending partly upon it and partly upon each other, forming to a certain extent a vicious circle. The blood, probably, was first altered in composition (semi-baked), causing impaired nutritive capacity with a tendency to stagnation from its viscidity. The renal capillaries became blocked up by the altered blood, thus cutting off the excretion of urea and its allies, which must have been formed in enormous quantity over and above that of health, from the rapid metamorphosis of tissue which it is reasonable to expect was occurring under the influence of the high temperature. Venous stagnation and vitiated blood, together with the changes in the cerebral tissue incident to the high temperature, produced the coma with the impairment of activity in the respiratory centre, while the latter, with venous stagnation and cardiac weakness, caused interference with respiration. Respiratory interference again reacted upon both the cerebrum and the heart. So, also, the heart, organically affected by the high temperature and functionally by the changes in other organs, kept the vicious circle revolving.

The secretions of the skin were markedly absent, and the intestinal tract also was greatly disturbed, as evidenced by the frequent occurrence of profuse discharges.

But a few of the cases could be traced after their departure from the hospital. Of those who were reached, Cases IV., V., VII., XXII., and XXIII. have had no sequelæ, while Case VIII. has had impairment of vision and memory.

ALCOHOLIC PARALYSIS.

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The earliest account of alcoholic paralysis is said to have been given by Dr. Jackson, of Boston, in 1822. Very little attention was given to Dr. Jackson's observations, which, however, were confirmed, in 1849, by Magnus Huss, of Stockholm. Dr. Wilks was one of the first British writers to draw attention to the frequency of paraplegia in inebriates, and he wrote, in the *Lancet*, on the subject fifteen years ago, and described it in his *Lectures on the Diseases of the Nervous System*, published in 1878. Since Dr. Wilks's papers alcoholic paralysis has been accurately described by numerous observers; and the lesion of the nervous system associated with this paralysis was proved by Lancereaux, in 1881, to be a multiple peripheral neuritis. Dreschfeld and Hadden, in this country,

have confirmed the discovery of Lancereaux, and it is certain that the paralysis in chronic alcoholism is due to changes in the peripheral nerves. Déjérine, Charcot, Hun, Buzzard, Handfield Jones, and Broadbent, have all reported cases, and have each added to our knowledge of the disease. As the result of the labors of these observers alcoholic paralysis is now acknowledged to be a definite malady with well-defined symptoms and pathology.

Dreschfeld (*Brain*, vol. vii.) divides alcoholic paralysis into two types: alcoholic ataxia and alcoholic paralysis proper.

Alcoholic ataxia occurs chiefly in man, and is by no means so frequently met with as is alcoholic paralysis. The symptoms greatly resemble those of locomotor ataxia, there being marked incoördination in the lower extremities, lancinating pains, and loss of knee-jerk, without paralysis or atrophy. In all cases in which there is loss of the knee-jerk and ataxia, alcoholism must be excluded before the diagnosis of tabes is arrived at.

In alcoholic ataxia there is usually a history of alcoholic excess, but the absence of this cannot be relied upon, for it is often concealed or denied; men, however, not being so deceitful in this respect as women.

Morning sickness and dyspepsia, or a history of hæmatemesis, would be strong evidence in favor of the alcoholic origin of the affection.

Mental symptoms, such as loss of memory and delirium, would be suggestive; but loss of memory and other mental symptoms are common in tabes.

In alcoholic ataxia we do not find myosis, or the Argyll-Robertson pupil, or joint affections, or visceral crises, but the knee-jerk is abolished.

In alcoholic ataxia there is generally some tenderness in the calf-muscles, which, when present, points strongly to the alcoholic nature of the affection. Moreover, any qualitative electrical changes would be decisive against tabes.

The symptoms in this form of alcoholic paralysis are due to a multiple neuritis, especially of the sensory nerves, and it differs from the second type in the absence, or, at any rate, in the extreme mildness of hyperæsthesia, hyperalgesia, paralysis, and atrophy.

The second type of alcoholic paralysis, *alcoholic paralysis proper*, is by far the most common, and it is met with in women far oftener than in men. The disease usually commences and progresses gradually, being subacute in its intensity, but the onset is occasionally acute, and attended with fever. Sensory disturbances are well marked, there being hyperæsthesia of the feet and legs, which, in severe cases, may be followed by anæsthesia and analgesia. The patient usually complains bitterly of "cramps" in the calf muscles and of lancinating pains. These sensory disorders are usually most marked in the lower extremities, but fre-

quently affect the upper limbs also. The calf-muscles are exquisitely tender when grasped, and this symptom is highly characteristic of the disease. Tenderness is, also, usually elicited by pressure applied along the course of the nerves of the lower extremities.

A remarkable perversion of the sense of temperature has been observed in the subjects of alcoholic paralysis, all objects in contact with the skin appearing cold; I have not observed this in the cases I have met with. The patient complains of weakness, or may be of absolute paralysis in the feet and legs, sometimes she is able to get about with a shuffling gait, being unable to pick her toes up properly, and, therefore, constantly tripping; in more advanced cases the patient lies in bed helpless, being unable to move her feet, but having still some slight power in the hands. The extensor muscles of the legs suffer earliest and to the greatest extent, the feet being drooped and flaccid, all power of dorsal flexion of the feet being usually lost. The knee-jerk is almost invariably, and the plantar reflex frequently, abolished.

The arms are affected later than the legs and to a much less degree; the extensor muscles here also suffering most, dropped wrist (see illustration) being occasionally, though by no means always, present.

Alcoholic paralysis.

The paralysis, though usually affecting only the extremities, and always commencing and being most severe in these parts, may, however, be general; and even when extensor paralysis alone is evident, careful examination shows that there is general muscular enfeeblement.

The cranial nerves are sometimes affected; in one of my cases the presence of squint together with vomiting led to the diagnosis of cerebral tumor.

Buzzard has met with paralysis of the soft palate, of the face, and also of the external rectus oculi; and Hadden has noticed nystagmus in alcoholic paralysis.

In one of my cases ophthalmoplegia externa was present, together with double optic neuritis. The common causes of ophthalmoplegia externa are locomotor ataxia, syphilis, diphtheria, and exposure to cold.

Though paralysis of the ocular muscles has been observed in chronic alcoholism, I am not aware that the condition to which the term ophthalmoplegia externa is applied has been met with, and its occurrence would seem to show that it may be produced by lesion of the nerves as well as by lesion of the nerve nuclei, alcoholic paralysis having been proved to depend upon peripheral neuritis.

The following case of chronic alcoholism with ophthalmoplegia externa and double optic neuritis is at present under my care:

J. B., a man, aged fifty, was admitted into the Birmingham Workhouse Infirmary on January 25th. His relatives state that he has been drinking heavily for some years, and my friend, Mr. Newton, who attended him before his admission into the Workhouse, tells me that he has been drinking for years, and that the drooping of the eyelids came on about a month before admission; the patient having complained some weeks previously of pains and cramps in his legs.

The patient on admission was incoherent, constantly asking for drink, and unable to tell where he was, or to give any account of himself. He was unable to raise his eyelids, there being drooping of both lids, the left being less affected than the right.

There was slight external strabismus of the right eye. He was unable to rotate his eyeballs either upward or downward, but could move them readily from side to side. The pupils were small, but responded to light and accommodation. There was a slight degree of optic neuritis, the disk on each side being blurred and the vessels very tortuous. The knee-jerk was lost on both sides, the plantar reflex increased. There was no paralysis of the legs or arms, but the calf-muscles were exquisitely tender on being grasped, and pressure along the course of the posterior tibial nerves elicited great pain.

He could point his toes and there was no marked weakness of the extensors of the wrist or leg. The first metatarsal bone was fractured and he said this was due to a chair falling on his foot. The muscles of the leg responded normally to faradism and galvanism. His memory was much affected and he did not know where he was.

He had no knowledge of time or place. When asked if he had been out he always responded in the affirmative, declaring that he had been several miles and that he had had several glasses of whiskey—in fact, he talked of nothing but drink.

He took his medicine readily on being told it was whiskey, though he thought the taste of it was "very peculiar." In fact, he thoroughly illustrates the truth of the proverb, "In vino veritas," his speech betraying his previous habits. Since admission he has much improved, being now able to open his eyes, the lids only drooping slightly. There is still considerable restriction of the movements of the eyeballs, but this is daily diminishing. The patient has had no alcohol since admission.

The paralyzed parts are always flaccid and atrophied, the degree of atrophy varying with the intensity of the neuritis. Contracture may occur, but is rare. The bladder and the rectum are rarely implicated. The faradic irritability in mild cases may be present in a normal degree, but is usually diminished and in severe cases is entirely abolished. The

galvanic irritability is increased and the contractions sluggish and prolonged, the reaction of degeneration being well marked in severe cases.

Vasomotor changes are usually present, the extremities being red and sometimes œdematous and occasionally presenting purpuric spots, but these changes and also trophic disturbances are always more marked in the lower than in the upper extremities. Bedsores do not occur except in the worst cases.

The skin of the hands and feet sometimes presents the glossy appearance first described by Paget, at other times it is harsh and dry. The nails are frequently affected, being curved, ridged, opaque, and brittle.

Mental symptoms are almost invariably present; the memory is impaired especially for recent events; the patient is emotional, suffers from insomnia, dreams, restlessness, delirium, and hebetude, together with digestive disturbances such as morning sickness and retching. Such symptoms occurring with ataxy or paralysis render the diagnosis of the nature of these two symptoms tolerably certain.

I have elsewhere corroborated an observation of Dr. Dreschfeld's, of a peculiar form of delirium present in the subjects of alcoholic paralysis. Dr. Dreschfeld noticed that the subjects of this disease, though unable to move, would say that they had been out walking, often an impossible distance. Since writing on this delusion I have had abundant evidence of the truth of his observation.

In one case I asked the patient, who was quite helpless, if she had been out, and she said that she had been in the garden that morning—the friends also told me that she was always saying she had been walking somewhere—this delusion alone decided me in my diagnosis, though I had at that time not been acquainted with her drinking habits. This peculiar delusion is met with in most cases of chronic alcoholism. I had a man recently under my care at the Birmingham Workhouse Infirmary dying of phthisis, who had severe multiple neuritis—both legs being completely paralyzed. He had been a heavy drinker and it is probable that both the lung mischief and the neuritis had been brought about by alcohol, though Pitres and Vaillard have proved that peripheral neuritis follows phthisis apart from alcoholism.

This man, when asked if he had been out, always answered in the affirmative, and would declare that he had just walked several miles, mentioning localities in the neighborhood which he had just visited.

Within the last few months I have been called to see three women suffering from well-marked alcoholic paralysis, and I have no doubt such cases are of common occurrence, and that they are often unrecognized.

In all of these cases the drinking habits of the patient were unknown to the medical man in attendance, and even when he had prohibited stimulants, the patient's friends had yielded to her importunity and

were supplying her with "spirits" up to the very day that I attended. They presented the usual symptoms of the disease; one had suffered from diplopia. I learned from their medical attendants that one died, but that the other two recovered. One patient could walk ten weeks after I saw her, though her gait was shuffling, and the knee-jerk still absent. Another had rapidly improved on the withdrawal of all alcohol, and though unable to stand when I saw her, in a few months she could walk. She soon had a relapse, which her doctor discovered to be due to her again taking alcohol. He tells me that he read the "riot act," and that she was soon able to walk about again. The patient who died was in the typhoid state and evidently too far gone to save. I fancy the abrupt discontinuance of the alcohol in this case may have accelerated death.

When the diagnosis is arrived at, nay, even when the disease is suspected, the patient's friends and attendants should be separately questioned, and search should be made in the patient's room, and even under the mattress and pillows of her bed for bottles or other evidence of her propensity.

The diagnosis is usually an easy one. The patient complains of pains and loss of power in her legs, the feet are drooped and flaccid, and she cannot point her toes upward. The power of dorsal flexion of the feet is diminished or absent. The grasp is feeble, but there is often no marked paralysis in the upper extremities.

Great pain is elicited if the calf muscles are grasped, and tenderness is present along the course of the nerve trunks, the patient complaining bitterly of cramps in the calf muscles.

It will be found that the knee-jerk is absent, and this is a most important symptom, as tabes is rare in women. Mental disturbance is always more or less present, there being usually considerable loss of memory, and the peculiar delusions already mentioned. The presence of sickness or retching in the morning is highly suggestive of the disease.

It must be remembered that in many cases no history of alcoholic excess is obtainable unless the medical man, from being sure of his diagnosis, insists on its alcoholic nature, so that the diagnosis at first must be made from the physical and mental state of the patient, the diagnosis required being first that the case is one of multiple peripheral neuritis, and then that the cause of this neuritis is alcoholic excess.

In well-marked cases the diagnosis of peripheral neuritis is very easy, the sensory disturbances and electrical changes showing that the lesion is one of the peripheral nerves, but in mild cases sensory alterations may not occur at all, for in neuritis of a mixed nerve the motor fibres always suffer most; frequently, also, the nerves are affected beyond the

points at which their sensory branches are given off, and thus motor symptoms alone are present though the nerve is a mixed one.

Moreover, there may be complete motor paralysis without any electrical changes; but the distribution of paralysis is always an anatomical one, the muscles paralyzed being in groups supplied by particular nerves, the anterior tibial being the nerves especially affected, and the paralysis is gradual in its onset and progressive. By these features we can distinguish even these mild cases of peripheral neuritis from lesions of the anterior cornua of gray matter of the cord, but there is no doubt that many cases which have been recorded under the name of "subacute general spinal paralysis," have really been cases of peripheral neuritis.

The medical man should ask himself, Is the case due to organic or functional causes? If organic, is it due to cerebral, spinal, or peripheral disease?

The absence of the knee-jerk alone is quite sufficient to prove that the paralysis is not hysterical—the knee-jerk is never absent in simple hysteria and its absence denotes a lesion somewhere in the reflex path which traverses the cord at the level of the second and third lumbar nerves.

In cerebral paralysis there are no electrical changes, sensation is usually unaffected, rigidity and not flaccidity is present with exaggeration and not abolition of the tendon reflexes, muscular wasting is not marked, nor are trophic changes usually present.

Should a squint be present in a case of alcoholic paralysis it is possible that the vomiting and delirium might lead to the diagnosis of cerebral tumor or other brain lesion as the cause of the paraplegia. But this mistake is a bad one and the patient would in all probability be sacrificed through it, for she would be allowed to go on taking stimulants until she died.

The following diseases of the spinal cord must be distinguished from peripheral neuritis.

1. Locomotor ataxia.
2. Poliomyelitis anterior acuta.
3. Myelitis.
4. Meningitis.
5. Subacute general spinal paralysis.
6. Acute ascending paralysis or Landry's disease.

It is highly probable that cases of neuritis due to alcohol or other cause have been diagnosed as cases of locomotor ataxia and their cure as that of this almost hopeless disease. Loss of the knee-jerk, pains, and ataxy are present in both diseases, but the pupil symptoms of tabes are not present in peripheral neuritis. Qualitative electrical changes would be decisive against tabes. Before the diagnosis of tabes is made peripheral neuritis must be carefully excluded.

In peripheral neuritis due to alcohol the case runs a far more rapid course than does a case of tabes, and paralysis is soon very evident, with drooping of the toes and tenderness of the calf muscles.

In lesions of the anterior cornua of the spinal cord, as in subacute general spinal paralysis, there are no sensory disturbances and the distribution of the paralysis is a physiological one, muscles functionally associated being paralyzed, while in peripheral neuritis the distribution of the paralysis is an anatomical one. In multiple neuritis the extensor muscles of the forearms are always the first muscles of the upper extremities to be affected and the trunk muscles escape, while in ascending paralysis, due to spinal cord disease, the trunk muscles become paralyzed after the legs, and when the paralysis spreads from the intercostal muscles to the upper extremities the intrinsic muscles of the hand (supplied by the first dorsal nerve) are always the first to be affected, the extensor muscles of the wrist and fingers (supplied by the seventh cervical nerve) being affected later as the lesion ascends the cord.

In spinal meningitis the symptoms are those peculiar to lesions of the peripheral nerves, the nerve roots being implicated, but severe pain in the back aggravated by movement with retraction of the head and muscular twitchings distinguish this disease from peripheral neuritis.

In Landry's disease there are no sensory disturbances and no electrical alterations.

In paraplegia due to myelitis bedsores, bladder and intestinal troubles are almost invariably present, while in peripheral neuritis these symptoms are of quite exceptional occurrence.

The prognosis in alcoholic paralysis is usually favorable, if the nature of the disease is detected early, and its cause removed; should the patient still continue to obtain alcohol, the case will end fatally, either from bedsores or from some associated diseases, phthisis, or cirrhosis of the liver, or by the production of the typhoid state. Gowers has observed death from rapid cardiac failure in two cases. Complete recovery may ensue after the disease has continued for a year.

It is only by the use of electricity that we can make an accurate prognosis of the duration of the paralysis in a given case. If the faradic response be lost, and the reaction of degeneration be present, then the paralysis is severe, and several months must elapse before recovery can ensue. The gravity is increased should the galvanic muscular irritability be greatly diminished, and should there be no irritability at all, then recovery cannot take place. Of course, these remarks apply only to the degree of neuritis present. The general condition of the patient must be taken into account in giving an opinion as to the patient's chance of recovery. The presence of jaundice, fever, delirium, phthisis, or cirrhosis of the liver renders the prognosis more grave. The time in

which recovery may ensue must always be reckoned in months. Twelve months frequently pass before recovery is complete.

In all cases it must be remembered that no improvement can take place unless the patient be prevented from obtaining drink, and all such patients should be watched, and deception must be expected and looked for. Rest in bed is necessary, and after acute symptoms have subsided galvanization of the affected nerves and muscles is useful. If there is much pain, hot fomentations and anodyne liniments are very useful. Cocaine may be applied locally or injected hypodermatically. Opium must be given with great care. Rubbing is of great value, particular attention being given to the extensor muscles of the toes, and by this means contracture of the calf-muscles is prevented, and recovery hastened.

Internally, iodide of potassium, with strychnia and iron, has seemed to do good in my cases. I consider strychnia a most valuable remedy in chronic alcoholism. The application of blisters and counter-irritants along the course of the nerve-trunks is also useful, but, of course, interferes with the rubbing, which I believe to be the most useful of all modes of treatment in this complaint. It is difficult to estimate the value of drugs in this disease, for probably the mere withdrawal of alcohol is quite sufficient for the cure of most cases.

A CASE OF ALCOHOLIC PARALYSIS,

IN WHICH MYALGIC PAINS AND TENDERNESS WERE ABSENT, AND IN WHICH THERE WAS VERY LITTLE DISTURBANCE OF THE CUTANEOUS (TACTILE) SENSIBILITY; WITH A REPORT OF THE MICROSCOPICAL APPEARANCES OF THE NERVES IN A CASE OF PERIPHERAL NEURITIS, AND PERFORATING ULCER OF THE FOOT, ASSOCIATED WITH DIABETES MELLITUS.

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Sensory disturbances, more especially myalgic pains, muscular tenderness, and hyperæsthesia of the skin, are striking features in the great majority of cases of alcoholic paralysis. The following case is peculiar and exceptional inasmuch as myalgic pains and muscular tenderness were absent throughout its whole course, and that there was very slight evidence of any affection of the cutaneous (tactile) sensibility until the period of convalescence, when marked hyperæsthesia of the skin of the lower extremities was developed. The case is also interesting because

of the widespread distribution of the paralysis, and the presence of well-marked nystagmus and paralytic weakness of the muscles of the eyeballs.

The notes of the case are as follows:

Mrs. A., aged thirty, was seen by me in consultation with Dr. Halliday Croom on October 29, 1886, suffering from paralysis of the lower extremities.

Previous history.—The patient stated that when living in New Zealand, which she did for some years, she had a good deal of household work, and used at times to feel very tired; there was never, however, any distinct paralysis until the voyage home, when she became unable to walk, and was laid up. The legs, she says, were stiff, painful, and contracted about the knees. This condition continued from March until July (1884), when she had improved so much that she could walk about without difficulty. She continued well for a year (until July, 1885), when her legs again became weak; but she was able to walk with the help of a stick or her husband's arm until three weeks ago. She states that a month ago she walked three-quarters of a mile. Three weeks ago the paralysis rapidly increased, and she is now quite unable either to stand or walk. She gets very drunk at her menstrual periods, but is said to be steady between times; there is no dysmenorrhœa.

Present condition.—Memory is obviously much impaired, and the patient is nervous and easily agitated. She is unable to stand or walk without assistance; and even when supported on each side has great difficulty in getting across the room. She expresses great fear lest she should fall, and becomes much agitated and weeps when she is asked to try to stand by herself, crying out for help and convulsively clutching the nurse for support. (I may here state that I have observed this same sort of agitation, when the patient is asked to try to stand alone, in other cases of alcoholic paralysis, and that I attach considerable diagnostic importance to it.)

When she tries to walk, being supported on each side, the legs are thrown out in an uncertain way, and the toes are seen to droop. The muscles of the lower extremities are markedly atrophied; the atrophy is perhaps worse in the thighs than below the knees; the toes droop very perceptibly; the extensor muscles on the front of the legs, and the extensors and flexors of the thighs are chiefly affected. There are no myalgic pains, and no muscular soreness or tenderness on pressure is complained of. There was no opportunity afforded of making an electrical examination of the affected muscles. The knee-jerk is completely absent in both legs. The plantar reflex seems lively on each side, but as the patient complains of uneasiness, not actual pain, when the blunt end of the tuning-fork (the instrument with which I am in the habit of testing the plantar reflex) was drawn across the sole, it is difficult to be sure of this point; I am disposed to think that the movement of the foot which appeared to be reflex was, in part at least, voluntary.

The patient complains of some numbness in the lower extremities, but she can localize impressions perfectly; there is distinct hyperæsthesia over the soles and lower extremities generally. The feet are slightly œdematous; and she says the face and hands are also somewhat swollen. The bowels are regular; the functions of the bladder natural, and the urine free from abnormal constituents. There is some loss of power and fine tremor in the muscles of the upper extremities, but there is no

distinct wrist-drop. Since the paralysis became worse, the patient has been unable to write; she says, too, that she cannot lift a glass of water to her mouth, partly because she is unable to grasp it firmly, partly because she fears she will let it fall. When the eyes are closed, the patient is able to touch the tip of the nose with the forefinger of either hand with fair precision and accuracy. No special or localized atrophy can be detected in the muscles of the upper limbs.

The pupils are of medium size, and contract both to light and accommodation. The action of all the recti muscles seems to be defective; when the patient is told to look far out, either to the right or left, lateral nystagmus-like movements occur.

The tongue is somewhat tremulous; speech is thick and somewhat drawling, so much so as to suggest the presence of distinct paralysis in the muscles of articulation; it is doubtful, however, if this is the case, for the patient says her speech is unaltered; the teeth are very protruding and the palate high and arched.

The patient states that she has no pain anywhere; and has not had any pain in the lower extremities during the present attack. With the exception of impairment of memory and nervousness, her head feels all right; she is not giddy; she says that she sometimes hears a noise in her ears, like the sound of the sea. The thoracic and abdominal viscera are all healthy.

Progress of the case.—Under careful regulation of the diet, iodide of potassium, and strychnine, steady improvement took place.

On January 11th, when I next saw the patient, she looked bright and well. She was now able to walk around the room without a stick; she could stand on either leg, provided that she was first allowed to balance herself with the hand resting on a chair or table; and could stand quite steadily with the eyes closed and the feet close together. The loss of power and tremor in the muscles of the upper extremities and eyeballs had disappeared; she stated that she could now write perfectly well. The muscles in the lower extremities were much plumper and firmer; the knee-jerk was still entirely absent; the plantar reflex was equal on the two sides, but less lively than in most healthy persons. There was marked hyperæsthesia both in the lower and upper extremities. When the blunt point of a tuning-fork was drawn lightly across the skin, the patient made loud complaints of pain, and stated that she felt as if she were being severely scratched by a sharp-pointed instrument. There was no muscular tenderness, and the patient positively assured me that she had not felt any myalgic, "growing," shooting, or neuralgic pains since the present attack commenced. She stated that her memory was now quite restored.

Remarks.—The chief points of clinical interest in this case have already been emphasized, and need not be again referred to. It is now well known that alcoholic paralysis is due to an inflammation of the peripheral nerves. Whether the neuritis produced by alcohol presents any pathological (microscopical) characteristics by which it can be distinguished from the peripheral neuritis which occurs in locomotor ataxia, phthisis, diphtheria, diabetes mellitus, and from the multiple peripheral neuritis which (since we know not its exact cause) is termed

idiopathic, has yet to be determined. It may, however, be broadly stated that in all of these conditions the lesion resembles more or less closely the degenerative changes which Ranvier and others have described in the peripheral ends of divided nerves.

Through the kindness of Dr. Price, of Nottingham, I had the opportunity, some little time ago, of submitting to careful microscopical examination the peripheral nerves in a case of diabetes with perforating ulcer of the foot; and it may not be uninteresting to the readers of this journal if I append to this paper drawings illustrative of the morbid appearances which were present in that case. I may also add that the occurrence of inflammatory or degenerative changes in the peripheral nerves is the probable explanation of the fact that in the later stages of diabetes mellitus the knee-jerk is not unfrequently absent, a view which has been advanced by Buzzard, and which had previously occurred to myself when the case which I am now describing came under my observation.

The clinical report of the case, as published by Dr. Price, in the *Provincial Medical Journal* of May 2, 1887, is as follows:

A. D., aged fifty-six years, frame-work knitter and hawker, was admitted as an in-patient to the Nottingham Dispensary on May 27, 1886.

Previous history.—With the exception of an occasional winter cough, he had enjoyed fair health until eighteen months previous to his being treated at the dispensary. For eighteen months he had passed large quantities of urine, and had suffered from great thirst. He was stated to have led a wild life, was never of temperate habits, and had been addicted to drinking bouts. No definite history of gonorrhœa or syphilis could be elicited, but strong presumptive evidence of venereal taint was present in the form of two scars, one in each groin, and of various suspicious marks on the legs. He stated that eighteen months before admission he had suffered from pains in the legs, and that "his feet had felt dead." At Christmas, 1885, he caught cold, and suffered from an aggravation of the foot symptoms, together with abdominal pain and vomiting. It was said that at this time he walked on his heels. In February, 1886, three months before his death, the ulcers of the feet first appeared, and gradually increased until he came under Dr. Price's care. There was no history of gout, rheumatism, or injury; the patient had, however, been exposed to all weathers, and in following his occupation of hawker had walked a great deal.

Present condition.—When the patient came under observation he was suffering from bronchitis, and symptoms indicative of commencing diabetic coma. The heart sounds were feeble, and occasionally intermittent. The arteries of the upper limbs were evidently diseased. The pupils reacted feebly to light. There was diminished sensibility in both feet, and also in the lower thirds of both legs. The knee-jerk was totally abolished. The skin over the legs and feet was of a livid hue, and below the normal temperature. A fetid odor emanated from both feet. The ulcers had, it was said, commenced as corns. One ulcer, the size of a two shilling piece, was situated on the plantar aspect of the metatarso-phalangeal joint of the right great toe. Its outline was sinuous and ragged. The bones entering into the formation of the joint could be felt at the bottom of the sinus, the metatarsal bone being eroded. A sinus of the same character, but of smaller size, was situated over the plantar aspect of the head of the fifth metatarsal bone of the opposite foot; at the bottom of this sinus carious bone could be detected. A partially healed ulcer was also situated on the inner aspect of the left great toe.

The urine, which was acid, and of the sp. gr. 1.030, contained sugar and a trace of albumen, but no peptone.

The patient died of diabetic coma on June 1st, the fourth day after he came under treatment.

Microscopical examination of the spinal cord and peripheral nerves. The appearance of the right foot which, with portions of the spinal cord and great sciatic, posterior tibial, and plantar nerves, was kindly sent to me by Dr. Price, is shown in Fig. 1.

The *spinal cord* appeared normal to the naked eye. On microscopical examination the arteries, more especially those entering the posterior columns, were found to be diseased; a very narrow band of degenerated nerve tissue, in which there were numerous corpora amylacea, could be traced on each side of the thickened and diseased arteries in the posterior column, but the great mass of the posterior columns was free from disease; and the characteristic lesion of locomotor ataxia was completely absent. Some of the nerve cells of the anterior cornua were degenerated, pigmented, and atrophied.

The *sciatic nerve* appeared healthy to the naked eye. On microscopical examination, the greater number of the nerve bundles were healthy, but here and there, more especially toward the periphery of the bundles, some of the nerve tubes were degenerated.

The *posterior tibial artery* was in an advanced condition of atheroma, and at one part of its course was adherent to the posterior tibial nerve. In the lower third of the leg the posterior tibial nerve was thickened, and the fibrous tissue in which the posterior tibial nerve and artery were embedded was densely infiltrated with bright staining nuclei. The plantar nerves were atrophied.

The portions of the *posterior tibial and plantar nerves* which I had the opportunity of examining, were extensively degenerated. I am unable to say whether this degeneration extended throughout the nerve in the upper part of its course, or whether it had resulted from the inflammatory changes which surrounded the nerve at the point where it was in contact with the diseased artery—whether, in short, the degenerative changes in the nerve were the result of a true neuritis, or whether they were due to a peri-neuritis and the pressure of inflammatory products on the nerve trunk. From the fact that the sciatic nerve was comparatively little affected (see Figs. 3 and 5) I am disposed to think that the latter view is not improbable. If this view is correct, it is interesting to note that a perforating ulcer was present in each foot, and consequently that a symmetrical neuritis in each posterior tibial nerve may result from inflammatory changes which originate in connection with diseased vessels.

The microscopical appearances which the degenerated nerves presented are faithfully reproduced in the accompanying illustrations. In many instances the nerve tubes are, it will be seen, completely degenerated; their axis-cylinders and white substance of Schwann having completely disappeared; the tubules are shrunken and atrophied; and they are either completely empty, or contain a granular and molecular *débris* which is unstained with osmic acid. (See Figs. 6, 7, 8, and 9.)

In many of the nerve tubules in which the degenerative changes are less advanced, the white substance of Schwann is segmented and broken up into globules. (See Figs. 6, 8, and 9.)

In the neighborhood of Ranvier's nodes, the nerve tubules were often

FIG. 1.

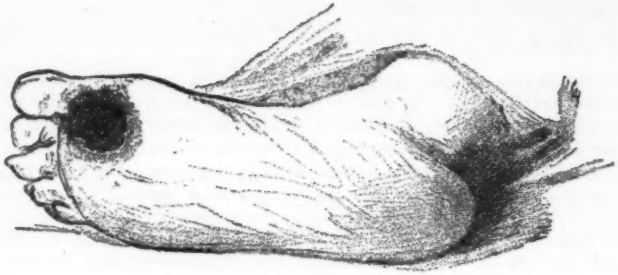
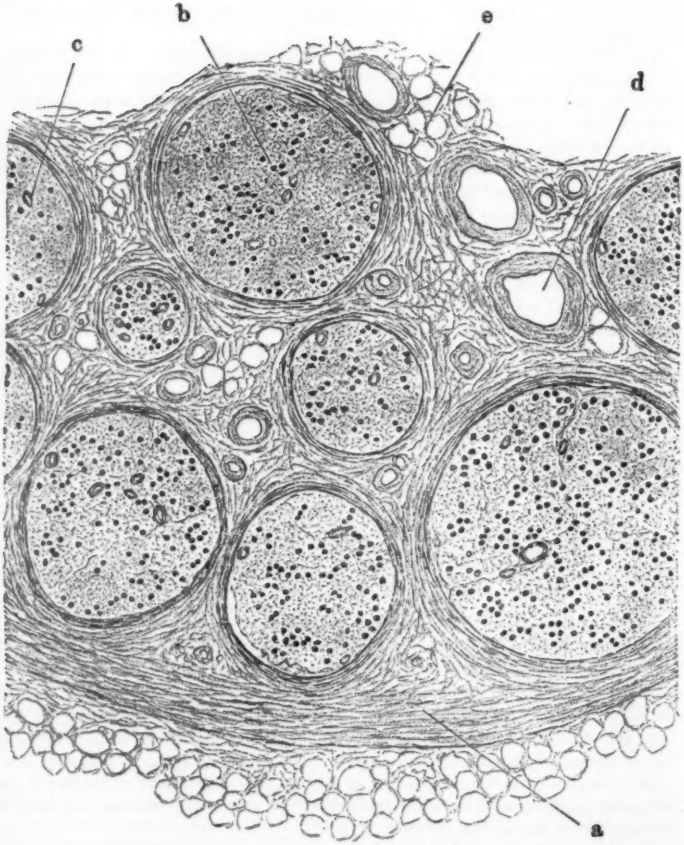


FIG. 2.



empty. The nuclei and protoplasm were in many places in great excess. The axis-cylinders were in some instances notably enlarged; and in some sections (see Fig. 7) many large rod-shaped masses of protoplasm, which stained much more deeply with picro-carmine than the ordinary ovoid nuclei, and which appear to be the remains of broken-up axis-cylinders, were observed.

The bloodvessels of the degenerated posterior tibial nerve were numerous and large; their coats were notably thickened.

For a detailed description of the appearances which the degenerated nerves presented the reader is referred to the figures.

Fig. 1 represents a perforating ulcer of the foot in a case of diabetes mellitus with advanced degeneration of the posterior tibial and plantar nerves.

FIG. 3.

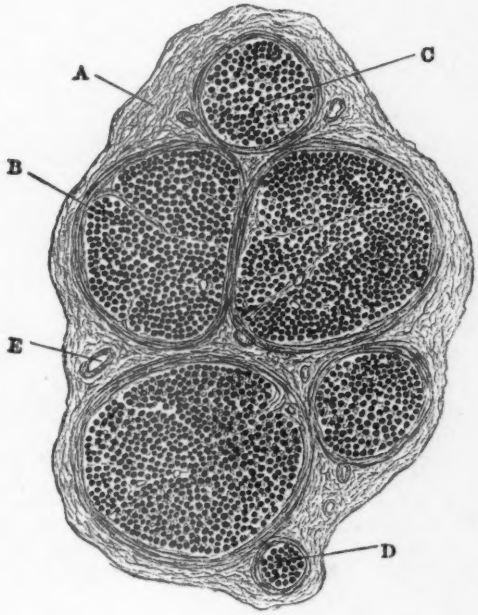


Fig. 2 is a camera lucida drawing of a portion of a transverse section of the posterior tibial nerve in a case of diabetes and perforating ulcer of the foot, showing extreme degeneration. Stained with osmic acid and picro-carmine and mounted in Farrant's solution. Magnified, Hartnack, ocular 3; objective 4; tube drawn out; and drawing reduced from 4½ to 4 inches.

The letter a points to the outer fibrous sheath of the nerve, which, at the point of section, is surrounded with fat cells. The letter b points to a transversely divided bundle of nerve fibres which are in an advanced state of degeneration; the greater number of the nerve tubules are

atrophied; the darkly stained corpuscular-like bodies are transversely divided nerve tubules which still contain fatty material and in which the degenerative changes are much less advanced; compare with Fig. 3, in which a bundle of healthy nerve fibres from the sciatic nerve is seen. The letter c points to a small vessel in an adjacent bundle of nerve fibres; d, to a large vessel in the cellular tissue of the nerve [*i. e.*, between the bundles of nerve fibres], the walls of which are markedly thickened; the letter e, to fat cells.

FIG. 4.

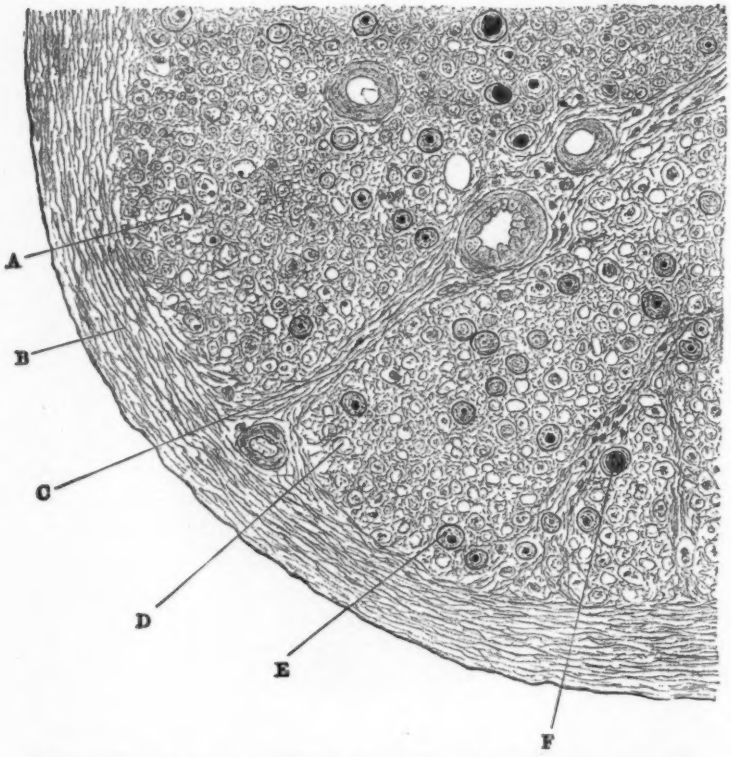


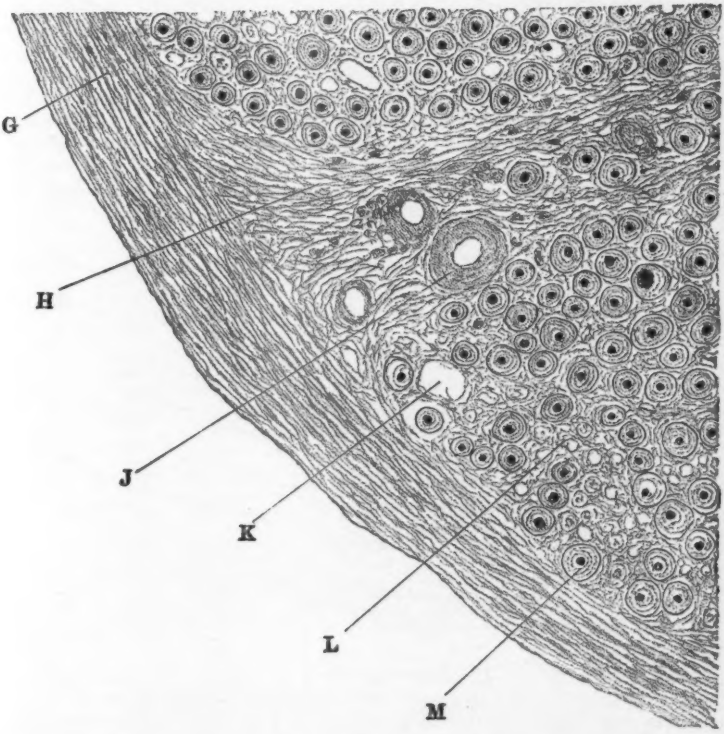
Fig. 3 is another camera lucida drawing of a portion of a transverse section of the sciatic nerve, in a case of diabetes and perforating ulcer of the foot, showing little or no degeneration. Stained with osmic acid and picro-carmine, and mounted in Farrant's solution. Magnified, Hartnack; ocular 3; objective 4; tube drawn out, and drawing reduced from 3¼ to 2¾ inches.

The letter A points to the fibrous tissue surrounding the nerve bundles (not, however, in this case the outer sheath of the nerve, for the portion of nerve shown in the figure was situated in the centre of the

nerve and not at the periphery); B, C, and D, to transversely divided bundles of nerve tubes, in which there is little or no degeneration—the darkly stained corpuscular-like bodies are the healthy nerve tubules seen in transverse section. (Compare with the degenerated posterior tibial nerve shown in Fig. 2.) The letter E points to a small vessel in the fibrous tissue between two adjacent nerve bundles.

Fig. 4 is a camera lucida drawing of a portion of a transverse section of the posterior tibial nerve in a case of diabetes mellitus and perforating ulcer of the foot, showing extreme degeneration of the nerve tubules. (Compare with Fig. 5.) Stained with picro-carmine, and mounted in

FIG. 5.



Farrant's solution. Magnified, Hartnack; ocular 3; objective 9; immersion tube drawn out, and drawing reduced from 5 to 4½ inches.

The letter A points to a degenerated nerve tubule containing some *débris*, or the remains of the axis-cylinder; B, to the fibrous sheath of the nerve bundle; C, to a process of fibrous tissue passing into the nerve bundle, in which three minute vessels, the walls of which are much thickened, are seen; D, to a degenerated and empty nerve tubule; E, to

a healthy nerve tubule; F, to a nerve tubule, in which the axis-cylinder is much enlarged. A large vessel, the walls of which are much thickened, is seen in the centre of the drawing.

Fig. 6.

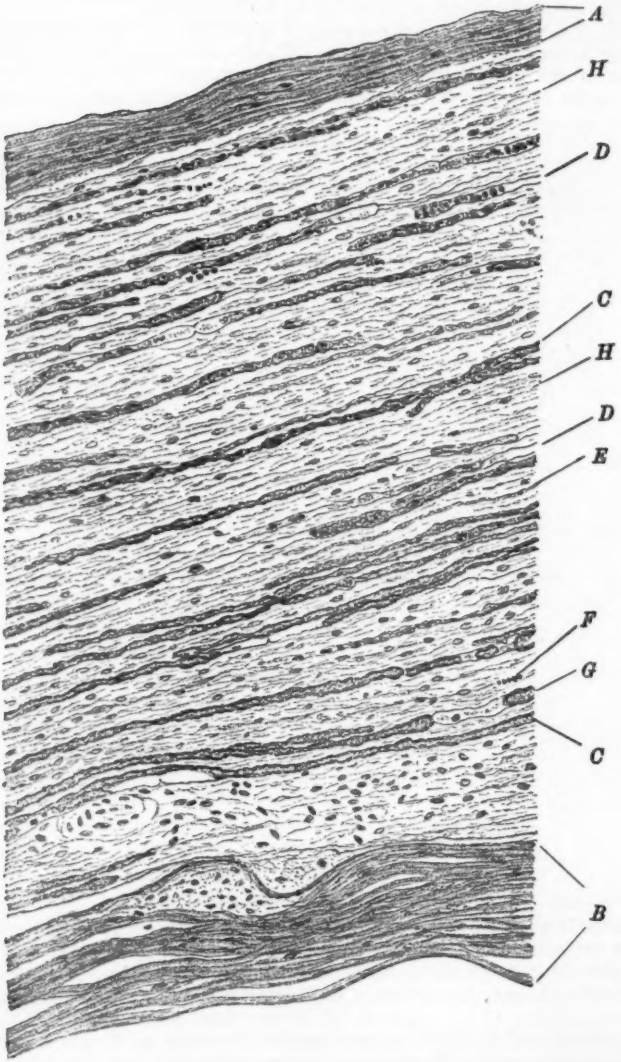
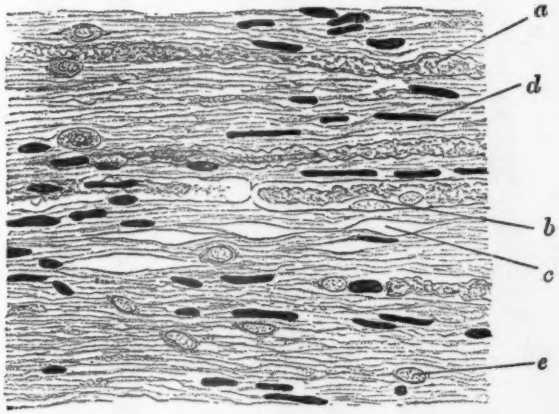


Fig. 5 is a camera lucida drawing of a portion of a transverse section of the sciatic nerve in a case of diabetes and perforating ulcer of the foot; showing comparatively little degeneration. Stained with picro-carmine, and mounted in Farrant's solution. Magnified, Hartnack; ocular 3; objective 9; immersion tube out; and drawing reduced from 5 to 4¼ inches.

The letter G points to the fibrous sheath of the nerve bundle; H, to a process of fibrous tissue passing into the nerve bundle; J, to a small vessel, the wall of which is much thickened; K, to an empty space from which the nerve tubule has disappeared; L, to degenerated and shrunken nerve tubules; M, to a healthy nerve tubule. One of the axis-cylinders, further from the periphery than the point to which the letter K points, is enlarged. The fibrous tissue between the nerve tubules is in excess; the degenerated nerve tubules are chiefly seen at the periphery of the nerve bundle.

Fig. 6 is likewise a camera lucida drawing of a portion of a longitudinal section of the posterior tibial nerve in a case of diabetes mellitus and perforating ulcer of the foot, showing extreme degeneration. Stained with picro-carmine, and mounted in Farrant's solution. Magnified, Hartnack; ocular 3; objective 8; tube in; and drawing reduced from 8¾ to 6¼ inches.

Fig. 7.



The letters *A* and *B* point to the fibrous sheath of the nerve bundle; *C*, *C*, to nerve tubules which still contain their fatty sheath: *D*, *D*, to degenerated nerve tubules in which numerous small globular masses (globules) of broken-down and degenerated myeline are seen; *E*, to a degenerated and shrivelled nerve tubule; *F*, to small globules of broken-down myeline in a nerve tubule, the walls of which are not distinctly seen in the drawing; *G*, to a partly degenerated nerve tubule, showing one of Ranvier's nodes, and an empty portion of the nerve tube adjoining it; *H*, *H*, to richly nucleated fibrous tissue, in the midst of which the shrivelled remains of completely degenerated nerve tubules are seen. In several places a Ranvier's node with the nerve tube on each side of it empty, is seen.

In order to see the details of this and the other drawings, they should be held about six inches from the eye.

FIG. 8.

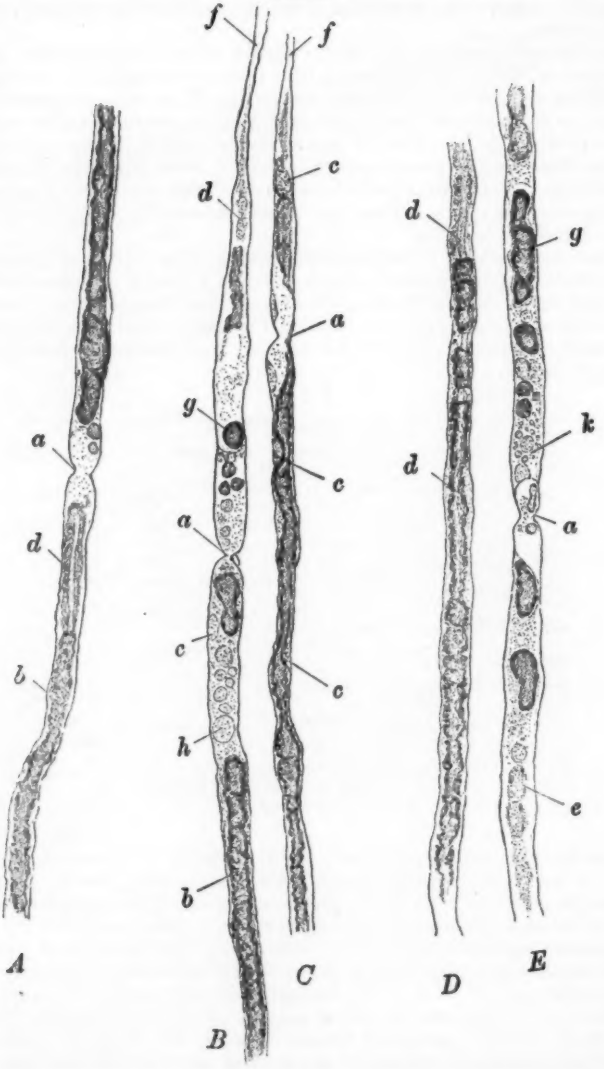
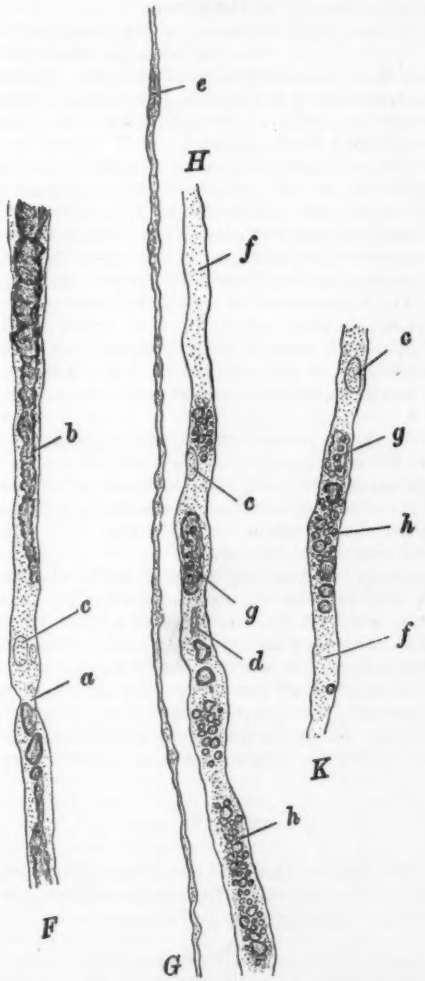


Fig. 7 is a camera lucida drawing of a portion of a longitudinal section of the posterior tibial nerve in a case of diabetes mellitus, and per-

forating ulcer of the foot, showing numerous deeply stained, rod-like bodies, some of which probably represent the remains of former axis-cylinders. Stained by long immersion (for a fortnight) in picro-carmine solution, and mounted in Farrant's solution. Magnified, Hartnack;

FIG. 9.



ocular 3; objective 9; immersion tube drawn out; and drawing reduced from 3¾ to 3¼ inches.

The letter *a* points to a nerve tubule in which the fatty sheath still remains; *b*, to a nerve tubule which is more degenerated, and in which

a Ranvier's node, and two nuclei (which are not, however, very deeply stained) are seen; *c*, to a fusiform dilatation of an empty and completely degenerated nerve tubule; *d*, to a deeply stained rod-shaped body, which probably represents a portion of a former axis-cylinder; *e*, to a large oval nucleus, which is not, however, very deeply stained; many similar oval nuclei, some of them surrounded by fine granular protoplasm, are seen throughout the section.

Fig. 8 is a camera lucida drawing of longitudinally divided nerve tubules (*A*, *B*, *C*, *D*, and *E*), from the posterior tibial nerve in a case of diabetes mellitus and perforating ulcer of the foot. Stained with osmic acid and picro-carmine, and mounted in Farrant's solution. Magnified, Hartnack; ocular 3; objective 9; immersion tube drawn out; and drawing reduced from 7 to 6½ inches.

The letters *a*, *a*, *a*, point to Ranvier's nodes; *b*, *b*, to the myeline sheath at points where it still remains entire (unsegmented); *c*, *c*, *c*, to nuclei, some of which are proliferating; *d*, *d*, *d*, to the axis-cylinder; *e*, to a greatly enlarged axis-cylinder in the process of breaking down; *f*, *f*, to empty and shrivelled portions of the nerve tubules; *g*, *g*, to portions of the broken-down (segmented) myeline sheath; *h*, to a large globular mass, which appears to be a broken-down portion of the myeline sheath, but which does not stain (or is only very faintly stained) with osmic acid; *k*, to a mass of small globules and granules, also unstained with osmic acid, in the neighborhood of a Ranvier node. Many other globular masses unstained by osmic acid, are seen in the neighborhood of *h* and *k*.

Fig. 9 is also a camera lucida drawing of longitudinally divided nerve tubules (*F*, *G*, *H*, *K*) from the posterior tibial nerve, in a case of diabetes mellitus and perforating ulcer of the foot. Stained with osmic acid and picro-carmine, and mounted in Farrant's solution. Magnified, Hartnack; ocular 3; objective 9; immersion tube drawn out; and drawing reduced from 6¼ to 5¾ inches.

The letter *a* points to a Ranvier node; *b*, to the myeline sheath at a point where it still remains entire (unsegmented), though markedly degenerated; *c*, *c*, *c*, to nuclei, some of which appear to be proliferating; *d*, to a portion of an axis-cylinder; *e*, to a mass of very finely granular matter in a nerve tubule, which is completely degenerated and extremely atrophied; *f*, *f*, to portions of the nerve tubules, which are practically empty, only containing a small quantity of finely granular material; *g*, *g*, to large masses of the broken-down myeline sheath; *h*, *h*, to collections of small globules composed of broken-down (segmented) myeline sheath.

CARDIAC DEGENERATIONS AND BRIGHT'S DISEASE THE RESULT OF CHANGES IN THE INTIMA OF THE ARTERIES AND VEINS.[1]

By Arthur V. Meigs, M.D.,
Physician to the Pennsylvania Hospital.

A man, fifty-four years of age, was admitted to the Pennsylvania Hospital July 12, 1886, with the following history: He had always en-

[1] Read before the Philadelphia Pathological Society.

joyed good health except that about ten years before he had had an attack of rheumatism, which, however, was so slight that he was never obliged to give up his work. He had used alcohol in moderation, and denied having had venereal disease. He was taken sick about four or five months before admission to the hospital with dyspnœa, cough with expectoration, and loss of flesh and strength, and some swelling of the ankles. There was a trace of albumen in the urine, but the microscopical examination was negative. The albumen soon disappeared, and was not again found during his life.

Physical examination gave the following results: Radial pulse aortic in character; there is forcible and heaving pulsation over a largely increased area in the precordial region. The apex impulse is in the sixth interspace outside the nipple line, and pulsation can be felt as high as in the second interspace, and slight pulsation in the epigastric region. At the apex, the sounds are booming, and there is a loud, harsh murmur synchronous in time with the aortic thrust. At the aortic area there is a double murmur, neither portion of which is very loud. The systolic murmur becomes harsh at the upper part of the sternum, and both murmurs are audible in the carotids and subclavians, the systolic being much the louder. There is visible arterial pulsation in the neck and of the radials. The jugular veins are swollen, but not unusually so, and there is no venous pulsation. Lungs filled with sibilant râles, and there is some dulness at areas both anteriorly and posteriorly. The liver dulness natural, and the splenic slightly increased.

The following inferences in regard to the case were recorded at the time: Disease is probably vascular in origin, there is aortic obstruction and regurgitation and mitral regurgitation. The heart is enlarged, the enlargement preponderating upon the left side, and the vessels are atheromatous. Lungs congested and bronchitis exists. He died October 4, 1886.

Post-mortem.—Lungs somewhat adherent to chest wall and emphysematous and congested posteriorly. Heart much hypertrophied and distended with soft dark clots. The aortic valves thick and puckered, and the orifice narrowed. Mitral flaps not markedly diseased. Right side showed no valve changes. The papillary muscles in the left ventricle showed, upon section, marked fibroid degeneration, and there were spots, one in particular, in the anterior wall of the ventricle, which showed what seemed to be a less degree of the same degeneration. No such appearances could be detected in either the papillary muscles or walls of the right ventricle. The papillary muscles of the left ventricle, when viewed in cross section, exhibited numerous holes of a size, and looking as if they had been produced by a pin being stuck in the tissue. The aorta was much thickened, though not pouchy, and its ascending portion contained some calcareous plates. The arch and descending portion, and the abdominal aorta and all its branches, including the cœliac axis, mesenterics, renals, primitive iliacs, and iliacs after their division, as well as many smaller vessels, were markedly thick and uneven upon the inner surface. The abdominal aorta on section showed at least one minute cavity, probably an atheromatous abscess. The internal mammary and coronary arteries were very markedly atheromatous. Examination of the veins showed that the inferior cava was much thinner at some positions than others, though everywhere the lining of the vessel was smooth. One of, the primitive iliac veins,

though it looked, so long as unopened, natural, exhibited, when slit open, two bands which divided it into three separate channels, and must have reduced its carrying capacity by at least two-thirds. Another vein of about the size of a goose quill was found, which was four or five times as thick upon one side as the other, the thick side being like a rigid rod, and the other soft and flaccid as veins usually are. Stomach seemed natural. The liver granular and congested, and the spleen dark, congested, and firm. The kidneys congested and slightly cystic.

Sections were prepared for microscopical examination from the kidneys and their arteries, both small and large branches, from the lung, liver, heart, abdominal aorta, inferior vena cava, and a branch of the right renal vein. The sections from the heart included cuts, both transverse and longitudinal, of the posterior papillary muscle of the left ventricle, one including the anterior flap of the mitral and the left coronary flap of the aortic valve; one from the anterior wall of the right ventricle, including an artery; one about one-third or half way down the interventricular septum, including the wall of the left ventricle and arteries; and a separate section of the first descending branch of the left coronary artery. These sections all showed ordinary degenerative changes, such as would be expected, the kidney exhibiting in a marked degree parenchymatous change, and containing numerous casts, both in the cortical and medullary tubules. Some of the branches of the coronary vein exhibited distinctly thickening of the lining coat, and in one in particular from the anterior surface of the left ventricle there were spots which were so much thicker than the intima at most parts of the circle, as to be very striking. These were made up of whorls of tissue containing nuclei, and in many respects resembled the so-called nests of epidermoidal cells. The point, however, to which it is particularly desired to call attention, is that all the various sections showed to a greater or less extent a peculiar morbid condition of the tunica intima of the arteries and arterioles. This consisted in an irregular thickening, often, in small arterioles, to be plainly distinguished as lying entirely within the plicated membrane, and in larger arteries recognizable by the naked eye as belonging to the lining of the vessel, and containing in many instances a greater or less number of nuclei imbedded in a structureless matrix.

The sections from the papillary muscle showed in marked degree the appearances of fibroid degeneration, there being great increase of the fibrous material, this ramifying from centres in various directions amongst the muscle bands, and in spots total disappearance of the muscular tissue had taken place. In others again the sheaths of the fibres were still distinct but their interior filled with a material evidently different from that constituting the healthy bands often visible in the same field. In some cases these muscle sheaths, when seen in cross section in particular, seemed to have within them vacuoles, or the contained material was transparent. The cross markings upon the muscle bands were disposed to be indistinct and many fibres seemed narrow and some pointed toward their extremities. There was marked brown atrophy, the pigment being visible at the poles of the nuclei both in longitudinal and transverse section. The muscle nuclei appeared in many instances to be much swollen. No large sized arterioles were visible, but in the transverse sections in particular there were a great many large roundish spaces which were surrounded by

fibrous tissue containing nuclei. Though their walls were very thin, these were probably veins, especially as quite a number of them were filled with blood corpuscles. The endocardial layer varied much in thickness and the outer portions in particular were, in places, infiltrated with round cells, and at spots where the increased thickness was great the muscular fibres underneath were much degenerated, in some places the sheaths seeming to contain only granular matter and again presenting the already mentioned apparent vacuoles.

It is very interesting to endeavor to discover among the complexity and apparent confusion of organic changes found in this man's body, what was the primary disease, and certainly the attainment of success in such a search would be the first step in the direction of our being more happy in our therapeutic management of such cases than we now are. He had had bronchitis, emphysema, and catarrhal pneumonia, for there was distinct catarrhal infiltration of the pulmonary alveoli; valvular disease of the heart and fibroid degeneration; fatty infiltration and atheroma with calcareous degeneration of some of the coronary vessels. There was also interstitial hepatitis, parenchymatous and cystic disease of the kidneys, and inflammatory bands obstructing one of the largest (the primitive iliac) veins in the body with further evidence of a diseased condition of the venous system (thickening of a branch from the inferior vena cava and thickening of the intima of some of the coronary veins of the heart). Lastly there was the disease of the arteries, consisting of the changes described in the intima and found in all the organs and tissues in which they were sought for.

The conditions might be said by some pathologists to be due to syphilis, as there was outgrowth of the lining of the arteries containing cellular elements, but this seems a mere begging of the question, as the man denied ever having had the disease, and it is now acknowledged by some of the best authorities that such outgrowth is often due to other causes. A few years ago the case would have been said to be one of valvular disease of the heart of rheumatic origin and all the other lesions to be secondary to this cause, but this seems a very weak explanation, as the patient never had any rheumatism except some slight vague joint pains which lasted only a few days and never prevented his working as a day laborer. This hypothesis, therefore, would seem very far-fetched and it is much easier to believe that the valvular disease was but part and parcel with the atheromatous changes found so extensively in the arteries, for what are the valves but reduplications of the lining portions of the arteries and heart?

Dr. Johnson and those who accept his views would probably say the case was one of parenchymatous disease of the kidneys and that all the other pathological lesions were secondary. He says (*Medical Lectures and Essays*, by George Johnson, London, 1887, p. 653), "During the progress of chronic Bright's disease, the bloodvessels in the kidney and

in many other tissues and organs undergo very interesting changes, but these occur later and less constantly than those which affect the secreting tissues of the gland," and again (p. 700) "the primary and essential structural changes consist in a desquamation, disintegration, and removal of the renal gland cells." In this case, however, there were no symptoms developed during life to draw attention to any disease of the kidneys, except that for a brief time after his admission to the hospital there was a trace of albumen without casts in the urine; the absence of any of the ordinarily recognized clinical symptoms of renal disease was a marked feature in the life history of the patient, the pathological lesions discovered after death and suspected or recognized during life in other organs were so much greater in extent and so overshadowed everything that might be attributed to the kidneys that it seems very unwarranted to assume that the kidney lesion, which was so latent, could have been the point of origin of the pathological train.

What then is left as an explanation of it all? The state of the blood-vessels which was found so widely diffused. There was evidence of marked disease of the veins as well as the arteries, and then the lesion of all others which was most extensively diffused, and which could be most easily demonstrated, was the change of the tunica intima of the latter. When several experts examine a section of an artery there will often be much difference of opinion expressed in regard to the state of the muscular coat, whether it is hypertrophied or not; and if hypertrophied, as to how much; but if the intima of an artery is seen to be twice as thick upon one side as on the other, every one must agree that the condition is a morbid one, or the section has been cut obliquely. This change of the intima has not been commonly noticed, and when it has been, it has not been given by any means the prominence due it. Johnson, even in his later utterances, does not correctly represent it, for he says (*Medical Lectures, etc., loc. cit.*, page 695):

"The thickening of the arterial coats is due to an excess of the normal tissue, with no appearance of structural change or degeneration. The increase of the inner longitudinal layer of the hypertrophied renal arterioles is due to a thickening of the tunica intima. The intima is composed of three distinct layers—an outer wavy elastic layer, in contact with the muscular coat; an inner endothelial layer; and an intermediate layer of delicate connective tissue . . . the thickening of the intima in cases of granular kindey is caused by an increase of the connective tissue between the elastic and endothelial layer. . . . It is always associated with hypertrophy of the muscular coat, and bears a constant relation to it. The structural characters of the thickened intima are remarkably uniform, its parallel fibres passing in the direction of the axis of the artery. and at right angles to the circular muscular fibres, while the canal of the artery retains its uniform and natural diameter throughout its entire course."

Again, at page 698, he says:

"On comparing the renal arterioles with those from other tissues, this remarkable difference is apparent, namely, that while the hypertrophy of the

muscular walls occurs alike in the arterioles in all the tissues, the thickening of the intima is found, so far as I know, only in those of the kidney."

No one has done more for the advancement of renal pathology than Dr. Johnson, and yet in the passages quoted he makes a number of statements which can by no means be substantiated. In the present state of knowledge no one has a right to assume that the thickening of the intima is due only to an excess of normal tissue, and is merely an increase of the connective tissue between the elastic and the endothelial layers, for in elderly people it is almost always impossible to distinguish any endothelial layer as a positive boundary; and frequently, when the process has reached the further stages of its development, in the arteries of the heart, for instance, there is extensive degeneration of the walls of the vessels, this extending deeply into the muscular layer. The existence too of hypertrophy of the muscular coat of the renal arterioles cannot always be positively demonstrated when there is evident increased thickness of the intima. The most marked characteristic of the thickening of the intima is its irregularity, its giving rise to various hills and hollows upon the inner surface of minute arterioles, just as can be seen in any marked instance of atheroma of the aorta or other large vessel. It is not worth while to repeat, after what has already been said, that the thickening of the intima is very far from being confined to the renal arteries.

The case as detailed would have been considered, without doubt, as one of Bright's disease with enlarged kidney, if the renal lesions alone had been examined; of valvular disease of the heart, due to endocarditis, if the gross appearances of that organ alone had been considered; and of fibroid degeneration, if the sections of the papillary muscle alone had been examined.

There is a communication in a late number of the *Lancet* (Lectures on Fibroid Degeneration, etc., of the Heart, and their Association with Disease of the Coronary Arteries, by J. L. Steven, December 10, 1887, and subsequent numbers), in which the author endeavors to show by the citation of cases that fibroid degeneration is, in the great majority of instances, due to disease of the coronary arteries. Why then is it not much easier and more natural to suppose that lesions such as those described are due to the condition of the arteries which is found to exist to so great a degree in so many different organs, and that the attack which has its origin in them becomes a case of Bright's disease, one of emphysema of the lungs, of valvular disease of the heart, or fibroid degeneration, or some other degenerative disorder, according as the arterial change takes possession of one or another of the organs.

It would seem, too, upon general principles, that it is much more likely that the intima is earlier attacked than the muscular layer, and suffers more, and causes more serious disorder, for the intima is supposed

to constitute the walls of the capillaries, which have no muscular coat, and this would perhaps go to explain entirely, or in part, the fact of the destruction of nutrition, which takes place in the organs most seriously affected.

The end to which these observations tend is to show that often Bright's disease, and some forms of valvular heart disease, besides many other chronic degenerative processes, are not separate entities, as has been supposed, but merely the varying expressions of a disease of the arterial system, which probably has its origin in the tunica intima. What the cause is which sets this condition in motion must be, in the present state of knowledge, a matter of speculation.

MALIGNANT ŒDEMA AND FAT EMBOLISM.

By L. Bremer, M.D.,
of St. Louis, Missouri.

Case.—On March 17, 1887, a woman of about thirty-five years of age, was admitted to the St. Louis City Hospital, who gave the following history: She had been in good health up to one month ago, when, after menstruation, she became very weak, lost her appetite, and fell off in flesh. About two weeks before admission she was seized with vomiting, which lasted about one day. She vomited six times on that occasion. After this she became still more debilitated, until finally she had to apply for admission to the hospital.

Status præsens.—Headache, anorexia, coated tongue, moderate diarrhœa, and vomiting, the latter having set in again the day previous to admission. A slight bloody discharge from the vagina was declared by the patient to be due to menstruation. Liver slightly enlarged, tender on pressure, skin jaundiced. Respiration hurried and superficial, pulse quick, moderate fever. The whole of the right pectoral region, and part of the upper right arm were swollen, of a bluish color, and *crepitated on pressure.* There was no external injury of the integument of these parts noticeable. The skin over the crepitating area appeared raised in spots; these elevations felt like small air cushions. *On being punctured they emitted a sero-sanguinolent fluid and a stinking gas, reminding one of sulphuretted hydrogen.*

The emphysema increased and spread rapidly, extending over the whole chest up to the neck, the lips and fingers became cyanosed and cold, the heart's action extremely rapid and feeble, and the patient died about twenty-four hours after admission, retaining her consciousness to the last.

This is the clinical report of the case, gathered from the record, and from data furnished by Dr. Dalton, resident physician of the City Hospital. I myself did not see the patient during life.

The report is rather meagre, owing to the short time of observation. Temperature chart was lost. Nothing could be learned as to the previ-

ous medical history of the woman, especially that of the last month of her life, since it was impossible to find out the name of her medical attendant. The only point of interest elicited by inquiry was that she had been a "sporting woman," who had separated from her husband, and was in the habit of producing abortion on herself by the introduction of instruments into the womb.

The autopsy was made seventeen hours after death.

The following were the most salient points evolved: Body of a medium-sized, well-nourished woman, of apparently thirty-five, skin jaundiced. Bluish-red discoloration of the skin over right pectoral region, extending to the middle of the right upper arm. The integument is punctured in about five places where the discoloration appears most intense. On pressing on the uninjured skin of these parts, there is decided crepitation. On incision, the right pectoralis, the deltoid, biceps, and part of the triceps muscles of the right arm, present a soft, structureless, friable, pultaceous mass of a reddish-brown color. Fat globules abound in the broken-down material. The subcutaneous adipose tissue seems to be partly melted down, torn, and shredlike. Some of the venæ comites brachi are thrombosed. Lungs look slightly congested and œdematous. All the organs of the pectoral and abdominal cavities are emphysematous, the gas being distributed not only in and beneath the investing membranes, but also in varying degrees throughout the parenchyma of the organs; consequently the heart, stomach, liver, pancreas, spleen, kidneys, uterus, with appendages, all float freely in water. The uterus is rather voluminous, four inches long, its mucous membrane covered by a layer of an inky-black mass. The retroperitoneal connective tissue looks like a heap of vesicles containing air.

All the organs, especially the spleen, which exhibits besides several infarctions, and is of brownish color, show, on sections, small holes varying from the size of a pin's head to that of a goose shot, filled with gas. The spleen especially, and, to a less extent, the liver and kidneys, look *worm-eaten*. No visible changes in the brain.

A *microscopical examination* reveals the following: The broken-down material of the right pectoralis, the biceps and triceps muscles and the subcutaneous areolar tissue covering them contains, besides shreds of connective tissue, many fragments of muscle fibres in various stages of fatty degeneration, smaller and larger fat globules. The free fat seems to be derived partly from the areolar tissue and the perimysium internum, partly from metamorphosed products of the contractile tissue. The whole mass swarms with bacilli which are easily stained with the usual basic aniline dyes. Gram's method fails to give satisfactory specimens; although quite a number of the microörganisms show a deep blue and even black color, a great many of them are found to be decolorized. No spores are demonstrable. Stained in aniline-water-gentian-violet the color is well retained even after washing the specimens with alcohol.

Two kinds of bacilli, differing in shape, can be made out; one, forming slender rods rounded off at their extremities and considerably smaller than anthrax bacilli; the other showing about double the diameter in both directions. The former is diagnosed as the bacillus of malignant œdema, the latter as the pseudo-œdema bacillus described by Flügge and Liborius. Small colonies of micrococci without any characteristic form or arrangement can be demonstrated in the uterine tissue, but not in the other organs.

The smaller bacilli were found in enormous masses throughout the organs of the pectoral and abdominal cavities, on the serous coverings as well as in the tissues themselves, but principally in those small holes which probably had been formed by the same kind of gas which produced the crepitation in the skin. It is reasonable to infer that, whenever larger colonies of the parasites had been formed, this gas was evolved as one of the products of bacterial metabolism and, expanding with equal force in every direction, the special cavities resulted.

The bacilli were found most abundantly in the uterine cavity, under its peritoneal covering, in the ovaries and the retroperitoneal connective tissue. However, the formation of cavities was not so marked in the substance of the womb and ovaries as it was in the spleen and liver.

The inky coat lining the uterine cavity was found to consist of blood corpuscles in various stages of disintegration and bacterial colonies. In some places these could be followed through the subepithelial tissue into the intermuscular spaces of the womb.

The following are the results of a microscopical examination of the several organs: In the lungs rather extensive simple œdema, swelled-up epithelia and albuminous detritus in many alveoli, bacilli in large numbers in the alveolar walls, none are observed in the vessels. Masses of fat clog and distend many capillaries. The heart's muscle is friable and difficult to cut. Some bacilli found between the intermuscular connective tissue fibres, a great many under the pericardium. They are also seen on the endocardium and in the fluid blood of the heart. In the (fatty) liver the bacilli abound in the capillaries. Some veins seem to be largely distended owing, no doubt, to gas secreted by the bacteria. Other cavities are found to be formed in the liver substance itself; here bacilli in great numbers adhering to the walls of the cavity. The whole organ looks wormeaten. There is beginning interstitial hepatitis. In the spleen the same pathological condition is observed, colonies found at irregular intervals throughout the organ, several infarctions and localized hemorrhages. The most important and marked pathological changes were to be seen in the kidneys.

There are traces of an old interstitial nephritis which, however, would scarcely seem sufficient to make any symptoms during life. In the pyramidal portion long tracts of bacterial colonies are seen to extend in the direction of the uriniferous tubules, the bacteria seem to lie in the connective tissue spaces, only occasionally and then only in lesser numbers can they be detected in the tubules. These latter are either greatly distended, the epithelium being either compressed or having entirely disappeared, or they are filled with epithelial masses undergoing a transformation into what seems to be in some places amyloid degeneration (methyl-violet colors them red). They have a tendency to coalesce in places, change their form, and break down into globules. Methyl-violet produces all shades of colors between red and yellow. The tubuli recti are especially affected in this way, whereas Henle's loops appear, on the whole, intact. In the cortical portion which, like the spleen, looks wormeaten, Bowman's capsules are enormously dilated in some places, while in others they are of normal size closely surrounding the glomeruli. The tubuli contorti in the neighborhood are also very much dilated, their epithelium being either greatly compressed or having disappeared. Here and there, the limiting membranes being broken, these dilated spaces communicate, forming ragged holes in the substance of

the kidney. It is these holes and the dilatation of Bowman's capsules that give the cortical portion the wormeaten appearance. In some of these spaces bacilli in great numbers can be demonstrated. There is fat embolism in many of the glomeruli, and the vasa recta, and free fat can be seen in some of the convoluted tubules of the first order (proximal convolutions).

Experiment showed that the microörganism observed in the various parts of the body was the bacillus of malignant œdema. A guinea-pig was inoculated in the abdominal wall with about four drops of the serosangineous fluid obtained from the disintegrated mass spoken of, and died about twenty-four hours after inoculation. The experiment was repeated in another guinea-pig, the infecting material having been scraped off the peritoneal covering of the liver and spleen. Death took place after about thirty hours. Few bacilli characteristic of malignant œdema were found in the blood, but they abounded on the serous membranes of the pectoral and abdominal organs. Formation of gas was only observed around the place of inoculation. Owing to defective methods, at that time, I did not obtain the microörganisms in a state of pure culture.

Remarks.—Koch[1] and Gaffky, several years ago, established the fact that when a quantity of earth, taken from the upper layers, especially of rich garden soil, or dust, or blood of decomposing animals, is introduced under the skin of a rabbit, or guinea-pig, or mouse, these animals take sick and die in from twenty to forty-eight hours. Blood, or material scraped off the serous membranes of the pectoral and abdominal cavities, when inoculated in healthy animals, will set up the same disease followed by the same result. But it seems that, by passing through several organisms, the poison loses its virulence, for the third animal in the series remains healthy after inoculation (Gaffky).

The disease had been previously known to and described by Pasteur,[2] who had produced it in animals by the subcutaneous injection of putrid blood; he found invariably in the animals thus infected a microörganism, which he called *vibrion septique*. Koch established the identity of this "vibrion" with his bacillus of malignant œdema. It is to the labors of this investigator and of Gaffky that we owe our knowledge of the habitat, life-properties, and pathogenic action of the microbe.

Besides, the artificially produced, malignant œdema is not uncommonly met with in sheep, hogs, cattle, and occasionally in horses. It is a disease which, until recently, was often confounded with anthrax; but the manner of invasion, its distribution through the body by way of the connective tissue canals (the anthrax bacilli spreading through the blood-stream), and difference in spore-formation, enable us to make the differential diagnosis between the two affections, which clinically resemble

[1] Mittheilungen a. d. Kaiserl. Ges.-Amt. I. p. 54. [2] Bull. de l'Académie de Méd., 1877, 1878.

each other so closely. The post-mortem changes correspond with those of the case described by me, the wormeaten appearance of the infiltrated muscle and of various organs, due to the gas-bubbles, deserves special mention.[1]

In 1882 malignant œdema was, for the first time, observed and recognized as such in man by Brieger and Ehrlich.[2] They injected in six patients, suffering from various affections, tincture of musk under the skin for the purpose of stimulation. Two of them were cases of typhoid with moderate fever, but presenting grave symptoms (sopor) on the part of the central nervous system; the others were one of puerperal sepsis, one of colic from biliary calculi, one of carcinoma of the stomach, and one of aortic aneurism. Nothing unusual was observed in the last four although the same syringe and the same injecting fluid had been used, but the two typhoid cases showed on the day following the injection at the injection puncture (on the thigh) a circumscribed redness and œdema, which rapidly spread upward and became generalized; it was accompanied by emphysema of the skin. Pari passu with the extension of these pathological lesions the patients sank and grew weaker, although the previously existing sopor had disappeared, and comparative comfort had been established. There was no additional rise of temperature, and the spleen showed the same volume it had before the injections. The patients died suddenly, having remained conscious until the end.

The autopsy was made by Juergensen, who found the lesions characteristic of typhoid.

The diagnosis of supervening œdema, made during life, was verified by inoculations in animals, and by obtaining pure cultures of the bacillus. The authors inferred that the tincture of musk injected contained the microbes of malignant œdema. Unfortunately, the tincture bottle had been lost through the negligence of the nurse, so that no examination of the suspected deleterious fluid could be made.

Brieger and Ehrlich remember only one case of extensive emphysema, occurring in a case of other infectious disease; this was a case of diphtheria, in which the trouble developed spontaneously, and terminated fatally. The diagnosis was not made at that time, but after their later experience. They conclude that it was malignant œdema supervening on diphtheria. They think that ordinarily man is little susceptible to the virus of malignant œdema, and that it takes a body weakened by other infectious disease (typhoid and diphtheria, for instance) to favor the invasion, and allow of the growth and multiplication of this parasite.

Such a combination of two different infectious diseases they call "mixed infections," and point to the not uncommon secondary microbian

[1] Comp. Kitt, Unters. über Malign. Oedem. u. Rauschbrand bei Hausthieren. Jahresber. d. Koenigl. Thierarzneisch in München, No. 15, 1885. See, also, Flügge's Mikro-organismen, pp. 193–197.

[2] Ueber Malignes Oedem bei typhus abdominalis, Berlin. klin. Wochenschr., 1882, No. 44.

invasion in cases of typhoid fever, smallpox, and anthrax carbuncle, in the course of which other bacteria than those recognized as pathogenic of the affections named, make their appearance. Here, then, the original parasite seems to pave the way and prepare the ground for a different class of invaders. This explanation is also applicable to the occurrence of new infections during convalescence from an original infectious disease.

Better known, though going by a different name, is malignant œdema in man after complicated fractures and deep, lacerated wounds. In pre-antiseptic days it was not uncommon to witness emphysematous gangrene—*i. e.*, in modern parlance, malignant œdema—in such patients. Trifaud[1] has published a case of what the French call *gangrêne gazeuse foudroyante*, occurring in a man, æt. thirty-three, after an open fracture of the femur. Trifaud has looked up the literature and found altogether 123 cases reported, all of them due to traumatism. Basing his conclusions on these cases, he finds that there are two kinds of emphysematous gangrene; one, local in its onset, and the other, general from the start. The results of a microscopical examination in Trifaud's case, regarding the bacteria found, and his experiments made on animals, agree on the whole with the experiences of Pasteur, Koch, and Gaffky, and there can be no doubt that this terror of past generations of surgeons is due to a successful invasion of the ubiquitous bacillus of malignant œdema. Rosenbach[2] arrived at the same conclusions.

As regards the case described by me, I am fully aware of its deficiency in point of clinical observation; although there can be no doubt as to its nature. It would have been of interest to examine the urine for microbes and fat. Again, the autopsy was made seventeen hours after death, which means, according to the experiences of Brieger and Ehrlich, that the number of bacteria found then does not correspond to that present at the time of death. These observers found that the bacilli of malignant œdema multiply more or less rapidly in the dead body according to a more or less favorable temperature. In our instance the corpse had been lying in the ice-box; still it is certain that there was an active post-mortem proliferation, since the microbes were also found, though in small numbers, in the bloodvessels, whereas it is characteristic of (experimental) malignant œdema that its bacilli spread through the connective tissue spaces; a fact, by the way, which permits a differential diagnosis from anthrax, which spreads through the bloodvessels. But it is reasonable to infer that the gaseous expansions of some of the internal organs (notably the spleen) took place intra-vitam; yet, some of the holes thus produced were found to be enormous dilatations of

[1] Revue de Chirurg., iii. 10-12; after Fortschr. d. Med., 83.

[2] Mikroörganismen bei den Wundinfections krankheiten des Menschen. Wiesbaden, 1884.

veins, which would show that in certain cases of malignant œdema in man the microbes circulate also in the blood.

This case is of interest, first, because it is the third of the kind published as non-traumatic malignant œdema; and, secondly, because of its complication with fat embolism, and all this without open fracture or deep, lacerated wound. It is safe to say that heretofore many persons have died from such a combination of pathological states without the nature of the disease having been recognized.

The point of entrance of the poison in our case seems to have been the uterine cavity. The woman was in the habit of producing abortions on herself by the use of instruments, and the appearance of the uterus was such as to warrant the belief that what was claimed to be menstruation was, in reality, the result of miscarriage. Probably an unclean—*i. e.*, an infected—instrument had been used in the operation.

The microscopical examination also pointed to the uterine cavity as the starting-place of the infection. The dense mass of microbes constituting a great part of the black material covering the inner surface, could be seen to insinuate themselves between the lymph spaces of that organ; the epithelial layer of the piece examined by me had entirely disappeared, thus favoring an easy invasion of the parasites. Although it is in the highest degree probable that the channels of infection led through the uterus, it could not be proved beyond a doubt that abortion had really taken place, or that instruments had been introduced into the womb. Might not an auto-infection have taken place—*i. e.*, might not the pathogenic organism favored by a low nutritive state of the patient, have found access to the blood from the alimentary canal, in which the bacilli of malignant œdema normally occur in considerable numbers?

Why it was that, of the peripheral parts, the pectoral region and the right upper arm were the seat of predilection for the multiplication and deleterious action of the microbe, is hard to explain.

Another difficulty presents itself when we inquire into the predisposing cause of malignant œdema in our case. The affection is certainly a rare one when compared with the number of criminal abortions and the usually observed forms of putrid infections following such practice. For the development of the latter the predisposition seems to be widely spread, from the former there exists almost an immunity, unless the cases of death from sepsis after abortion have been inaccurately observed; indeed, many of such patients may have died from malignant œdema without the disease being recognized as such. Whether in this case there had been a previous infectious disease which prepared the soil for the invasion of the specific bacilli, or whether it was the broken-down state of health that favored the intrusion of the parasite, is impossible to decide. There was, at all events, no sign of typhoid lesions in the

intestinal tract, and the only pathological changes demonstrable were a beginning interstitial hepatitis and a slight interstitial nephritis of old date which probably did not even give symptoms during life.

The jaundice may possibly be referred to the state of the liver alluded to, but it is more probable that part of the hæmoglobin in the blood was split up by the action of bacteria, one of the products of decomposition being the bilirubin, and that, consequently, this was a case of icterus hæmatogenes. Whether for such an event the schizomycetes had to be present in the blood, or whether their poisonous metabolic products (ptomaines) circulating in the blood are responsible for the decomposition of the coloring principle of the blood, is another question which, at present, it is impossible to answer.

Another point of interest is the fat embolism found in the lungs and kidneys. The grave and often fatal effects of fat embolism are well known to surgeons as not infrequently supervening on complicated fractures and deep lacerated wounds. The marrow of the broken bones, or the torn and mashed adipose tissue, is looked upon as being the source of the fat which, being absorbed by the veins, ultimately becomes impacted in and clogs the capillaries of the lungs, brain, and kidneys. Cases have also been reported of lesions of this kind having been produced without wounds, by blows on the skin, dislocations, etc.[1]

Even in infectious diseases the occurrence of fat-embolism is no novelty, although the text-books on pathology seem to be silent on this point. Flournoy,[2] who first described this pathological state in such diseases, found the marrow of the long bones altered, the canals being filled with a fluid dark-red mass, in which, under the microscope, a great many very small fat-cells and red blood-corpuscles could be seen.

The bones in my case were not examined. Jolly[3] reports three cases of fat-embolism occurring in delirious mania, two of which at least would to-day be diagnosed as malignant œdema; the remaining one presents only a probability of being of that nature. In all three of them there were injuries of the integument brought about by the restlessness and violent movements of the patients. In regard to one of them, a general paralytic, in whom a rapidly spreading bedsore had developed on the sacrum two days before death, the post-mortem report (Recklinghausen) says: . . . "Slight *icteric coloration of the skin*;[4] suggillations at the extremities, especially the lower ones; decubitus at the right great toe. . . . Deep decubitus in the gluteal region with *formation of emphysema* which extends to the right thigh. *Marked fat embolism* in the lung."

[1] Fitz: Boston Med. and Surg. Journal, May 30, 1878.

[2] Contribution à l'Étude de l'Embolie graisseuse. Dissert. Strassburg, 1878.

[3] Ueber das Vorkommen von Fettembolie bei aufgegten Geisterkranken. Arch. f. Psych. etc., xi. p 201, 1880.

[4] Italics my own.

I would like to call attention to the jaundice which furnishes an analogue to my case.

Similar lesions, namely, bedsores, septic infection, emphysema, and fat embolism, were also found in the third case reported by Jolly (maniacal excitement in supposed syphilitic insanity). This patient had also bruised and otherwise injured himself during the excitement.

In both cases there was evidently septic infection, either complicated by or manifesting itself under the form of malignant œdema, according as we assume that it supervened on a septic condition produced by the bedsore, or that malignant œdema itself may be one of the forms of septic infection.

Jolly's observations antedate Koch's publications on malignant œdema; hence they are not diagnosed as such. I myself remember having seen a general paralytic die with the symptoms of extensive emphysema, and bluish-red suggillations over the chest and abdomen. This individual had been suffering for several weeks preceding his death from a deep, cavernous bedsore on the right hip. He died suddenly. To-day I would set down the cause of death as malignant œdema with fat embolism.

Basing my conclusions on the results of pathological investigation in the case detailed by me, and reasoning from other instances, I would say that malignant œdema in man is apt to make its appearance in low states of nutrition, in the chronically insane, for instance, or in persons otherwise run down in health and weakened by previous, especially infectious disease. Whether it ever occurs in a body free from pathogenic germs, or whether it is simply an accompaniment to other putrid infections, is an open question. It may be that, when it occurs in diphtheria, it is only in the "septic" forms of that disease that it is observed. The fact that in our patient the gas formed in the subcutaneous areolar tissue was fetid, tends to show that in addition to the bacillus of malignant œdema there must have been other microbes at work which elaborated the fetid gases; for the gas of experimental malignant œdema has no odor, *i. e.*, the bacillus under consideration cannot be ranged among the putrefactive microörganisms. With the exception of the uterus, however, in which rare colonies of micrococci could be demonstrated, no microbes differing morphologically from the œdema bacillus could be made out.

Since writing the above I have had occasion to examine the organs of two cases of putrid infection after abortion resulting in death; no trace of malignant œdema could be discovered.

REVIEWS.

A Manual of Diseases of the Nervous System. By W. R. Gowers, M.D., F.R.S. Vol. II. Diseases of the Brain and Cranial Nerves. General and Functional Diseases of the Nervous System. Pp. viii. 975. London: J. & A. Churchill. Philadelphia: P. Blakiston, Son & Co., 1888.

The expectations excited by the first volume of this manual of nervous diseases, in which diseases of the spinal cord and nerves were so admirably treated, are fully realized by this second volume, which deals with diseases of the brain and general nervous affections. It may be said, without reserve, that this work is the most clear, concise, and complete text-book upon diseases of the nervous system in any language. And when the large number of such works which has appeared in Germany, France, and England, within the past ten years is considered, this implies high praise.

To the general practitioner Gowers' book offers a great boon; for the easy, pleasant style and clear diction aid greatly in the explanation of difficult subjects. The author has appreciated how severe a strain it is upon the attention of the general reader to follow the intricacies of the examination and diagnosis of many nervous affections. He, therefore, paves the way by a concise review of the structure and functions of the brain, devoting the first sixty-six pages to this important subject. It is now generally admitted that the only proper method of teaching brain anatomy is to describe functional areas of the cortex and their connection by nerve tracts with their related organs, and thus by conveying a notion of the physiology of the anatomical structures, to lay a foundation for the understanding of the results of disease in those structures. This method, long taught in Germany, finds in this manual its first complete presentation in the English language. Any one who masters the first sixty-six pages of this volume may feel that he is abreast of the best work done in the last ten years—a period which has virtually revealed brain anatomy. And he will be aided in his study by the many new and graphic illustrations which abound in this section.

The importance of this section is evident when the symptoms of brain disease, which are considered in the second sixty pages, are reviewed. For here symptoms are constantly referred to lesions, and shown to depend upon the seat of the disease and on the nature of the change that the nerve elements undergo, rather than on the pathological character of the primary lesions. Symptoms are classified into motor, including paralysis, spasm, and convulsions; sensory, including pain; mental, including delirium, loss of consciousness, and apoplexy; affections of speech; ophthalmoscopic and general symptoms. This section

is crowded with important information, and contains many original suggestions regarding the explanation of facts observed. The only criticism to be offered is that it might well have been made somewhat less concise. So much is condensed in the various sections that they require careful study. But those who desire a fuller discussion can find it in the little volume of the author on the *Diagnosis of Diseases of the Brain.*

The section on aphasia is especially interesting. Motor and sensory aphasia are clearly separated and their varieties discussed.

"The subject abounds in difficulty arising partly from its complexity and partly from the uncertainty due to a deficiency of facts and the obscurity produced by a redundance of theory. The clinical facts may be and have been variously explained; and it is almost startling to find how small is the ground on which some theories are based, and how much deficiency of fact a clear diagram may hide. Hence, an attempt to state the definite knowledge we possess may seem to be at once meagre in scope and hesitating in assertion. But if the certain knowledge is insufficient to enable us to explain all the complex phenomena, it furnishes a definite starting place from which to investigate them; and if the obscurity is recognized, we may be saved at least from misplaced confidence." (Page 103.)

This careful adherence to fact and avoidance of theory is characteristic not only of this section but of the entire book.

Diseases of the cranial nerves are next considered, one hundred and fifty pages being devoted to this section, the optic, ocular, and facial nerves receiving the fullest comment. Here the wide clinical experience, careful observation, and extensive reading of the author become evident. The views of authorities are presented, his own cases brought into comparison, and free criticism offered. From this point onward the book becomes not only a compendium for the general practitioner, but a valuable work for study and reference for the nervous specialist. The error so apparent in a number of American, English, and French text-books on nervous diseases, which consists in compiling a work from the observations of other writers, without the critical sense which experience alone conveys, is happily avoided. And the work becomes in consequence an original contribution to the knowledge of nervous affections, second to none which has appeared. It is not the function of the general reviewer to enter upon the discussion of special matters of dispute. But he may direct the attention of the specialist, as well as of the general reader, to this work as a model.

The chapter upon the localization of cerebral disease is perhaps less extensive than the subject warrants, but the facts had been partly considered in the first chapter, and the conclusions are stated in a concise form. Gowers has seen crossed amblyopia from lesion of the inferior parietal lobule, but he admits that disease of the cuneus produces hemianopia, and is inclined to locate the visual area in the occipital lobe. "The theory which best explains the fact is that on the outer surface, in front of the occipital lobe, there is a higher visual centre in which the half fields are combined and the whole opposite field is represented." This is certainly difficult to conceive, and the facts upon which such a theory is based, appear to be open to objection, it being admitted that a very careful examination of intelligent patients is necessary to distinguish crossed amblyopia from bilateral hemianopsia. So little has been written about the localization of the tactile sense in the cortex,

that it is worthy of note that Gowers regards the parietal lobe as having some connection with this function. "Extensive disease of the whole parietal lobe seems to impair sensibility in the trunk and limbs on the opposite side." Other conclusions are similar to those announced in 1878, by Nothnagel, and so fully confirmed by other observers in all countries since that time.

The chapters upon organic affections of the brain and its membranes contain admirable summaries of all the available facts, as well as occasional original contributions. The parts devoted to pathology and differential diagnosis are carefully written and very complete. Gowers has not, however, the faculty of so enumerating symptoms as to give one a vivid clinical picture of a disease, and the sections treating of symptoms would be comparatively unsatisfactory were they not enriched by personal observations and by very successful attempts to connect individual symptoms with pathological processes. An important omission is the lack of a chapter upon cerebral syphilis. It is referred to in several of the sections, but deserves a special section. The chapters on treatment would have been more complete had more attention been given to the subject of cerebral surgery, but Gowers says that "of the ultimate success of the operation it is too soon to speak."

About four hundred pages are devoted to the consideration of general and functional nervous diseases, which Gowers believes to be traceable to more than a mere disturbance of function, and to depend upon alterations in the nutrition of the nerve elements. He traces chorea to a tendency to spontaneous action of nerve cells on the cerebral cortex, due to a lowered power of resistance, and points out in support of this theory that it is a disease which occurs when the functional education of the nerve centres has been to a large extent effected, but is not yet complete, when the directions of functional activity and the lines of resistance have been developed, but have not yet received that stability which only long-continued action, with its underlying nutrition, can achieve. In discussing the relation of rheumatism and endocarditis to chorea, he discards the embolic theory of chorea as insufficient to explain the majority of cases, and adopts the old theory that the common cause of all three diseases is a blood state, or a condition of the system, including the blood, allied to that which causes acute rheumatism—probably of a chemical nature. Holding this view, it is natural that Gowers should urge general treatment in chorea, rather than reliance on special drugs, though he recommends arsenic. In slight chronic cases he uses strychnine. Electricity has no influence on the disease.

Tetanus, tetany, and the occupation neuroses, as well as paralysis agitans, and other forms of tremor, receive full consideration. In the chapter on epilepsy the author has drawn largely upon the facts already collected in his work on this subject, but has increased them by the observations of the past seven years. The discussion of the symptoms of epilepsy, especially the aura, is very interesting.

"The fact that the aura is the result of the commencing central process renders its study of great importance, since it gives us information of the functional region of the brain in which the process of the fit begins." (Page 682.)

"The teaching of pathology is that disease which excites convulsions is most frequently at the cortex, and that whenever organic disease causes convulsions that begin locally, the disease is almost invariably at the cortex.

In idiopathic epilepsy, the convulsions sometimes begin in this manner, and this suggests very strongly that in such cases the change occurs in the cortex." (Page 697.)

"When a lesion interrupting the internal capsule occurs in a person subject to general epileptic fits, the effect is that the fits which before were general almost cease on the paralyzed side. Such cases show that the discharge causing the general convulsions occurred above the internal capsule—*i. e.*, in the cortex of the brain." (Page 698.)

"The vasomotor theory of epilepsy is alike unneeded, unproved, and inadequate. The phenomena indicate that there is discharge of gray matter. Epilepsy must be regarded as a disease of gray matter, most frequently of the gray matter of the cortex. The phenomena of epilepsy suggest that the instability of the gray matter, its tendency to discharge, depends on instability of resistance, rather than on any primary change in the energy-producing action of the cells." (Page 699.)

"All treatment in epilepsy must be long continued, and bromides are the most reliable of all the drugs mentioned, the acne produced by them being checked by arsenic. The best results are usually obtained with not more than a drachm of bromide a day; if this does not arrest the attacks, larger doses rarely succeed, and combinations of bromide with other drugs are more useful. It may be given two or three hours before the attack occurs if that comes at a regular time. It should be continued two years after the last fit." (Page 706.)

The various neuralgiæ, vertigo, migraine, exophthalmic goitre, and the toxic neuroses receive ample consideration. The article on hysteria is very complete and very suggestive. The fact that hysteria may complicate serious organic disease, as well as simulate it, is emphasized, and the necessity of guarding against the danger of being satisfied with the diagnosis of hysteria alone is enforced.

The subject of neurasthenia deserves a more careful study than is accorded to it by the author, but English specialists fortunately see less of this disease than do Americans, and hence know less about it.

The appearance of the book is attractive, the printing is clear, and the figures are excellent. M. A. S.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Volume the Fifth. Edited by J. EWING MEARS, M.D., Recorder of the Association. 8vo. pp. xxiv., 383. Philadelphia: P. Blakiston, Son & Co., 1887.

A GLANCE at the tables of contents of these annually recurring volumes will enable the reader to learn what are some of the pressing surgical questions which have presented themselves to surgeons each year, as quite naturally the tendency is common among us to dwell upon those things which are novel, and to test those things of which the advantages and benefits as yet rest upon no certain basis of extended trial and observation. Accordingly, we find in the current volume two papers upon suprapubic cystotomy, one by Dr. Dennis, of New York, and one by Dr. Packard, of Philadelphia, while laparotomy for injuries of the intestines is considered in four articles from the pens respectively of Warren, of Boston, Kinloch, of Charleston, and Nancrede and Keen, of Philadelphia. From the perusal of these and other papers it is

impossible to resist the conviction that the improved methods under which the high operation upon the bladder is now done, and which led to its reintroduction to the profession, have given to it a prominent position, and one which it will probably continue to maintain.

Heralded by the immense advances made in abdominal surgery laparotomy has also acquired a position full of promise. It may not be that intestinal wounds have lost their gravity, far from it, but the writers of the papers contained in this volume, and those who have recorded the results of their experience with it elsewhere, have opened for us a door of hope which will not readily be closed, but which we firmly believe will be flung wide back for an increasing number of men to walk through and benefit many of their suffering brethren. In the light shed upon laparotomy for gunshot wounds of the intestines by the cases narrated by Drs. Keen and Kinloch, and referred to in the course of the very interesting discussion which followed, we are no longer left to the desperate inaction which has so long been the rule of practice prevailing hitherto. The condition may be very bad indeed, and the hope but slender, yet he does not require the prevision of a prophet who does not see in the results of many recent laparotomies ground for much encouragement. Of course, and the fact was adverted to in the discussion, many cases recover without operative interference, but we incline to think that these recoveries do not establish a rule, but rather furnish instances of the wonderful recuperative powers of nature to which we are so often indebted, but upon which we cannot wisely rely to the exclusion of the aid to be derived from a rational operation and one which has lost many of the terrors which formerly surrounded it.

The address of Dr. McGuire, the retiring President, is concerned with the value and importance of associated effort in attempting the elucidation of the grave and abstruse problems which come before scientific medical men; together with suggestions looking to the greater efficiency of the Society he addressed. These transactions are of increasing importance, and their issue one among the important annual surgical events. S. A.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY. Vol. xii., for the year 1887. 8vo. pp. 512. New York: D. Appleton & Co., 1888.

OF the fifty-eight active Fellows of this Society, forty-four were present at the last annual meeting, which was held in New York, and which derived additional interest from the fact that a number of invited guests were present from foreign countries and took part in the discussions, and three of them also read original papers. The sessions were also largely attended by native visitors from other cities. Prof. Alexander J. C. Skene delivered the annual address; and at the close of the sessions, Dr. Robert Battey, of Rome, Georgia, was honored by an election as his successor. In reviewing this creditable volume we shall confine our remarks to a few prominent points.

In the paper by Dr. Thomas Addis Emmet, of New York, on "The Causes and Treatment of Uterine Displacements," we find that he holds to the opinion that there is a certain "health line," in every woman,

varying in each, which her uterus should occupy if its circulation is to continue normal, and its veins empty themselves without over-distention. This he has repeatedly tested, by replacing and holding the organ with a finger, until the pulsation first felt in the circular artery gradually ceased. If the uterus be lifted too high, the same inconvenience is produced as results from its prolapse. Dr. Emmet stated that his experience taught him that pelvic inflammation was, perhaps, more frequent here than it was said to be abroad; and was quite as common among single as married women. He also claimed that retroversion with adhesions was often relieved by a spontaneous process of absorption with replacement.

Dr. Samuel C. Busey, of Washington, read a paper on "Cystocolpocele (prolapse of the bladder) Complicating Pregnancy and Labor," a rare form of dystocia, of which he had collected the records of thirty-six cases. As this condition may be mistaken for the bag of waters, a differential diagnosis is highly important. The subject is fully treated and deserves to be carefully read by obstetrical workers.

The paper, "Are the Tubes and Ovaries to be Sacrificed in all Cases of Salpingitis?" by Dr. William M. Polk, of New York, is on certainly one of the important questions of the day, and one upon which much is yet to be learned. There are cases in which the use of the knife is at once demanded; there are others in which it should only be resorted to when curative measures, long tested, have failed; and there are those also in which the nature of the lesion does not appear to render ablation essential. The dangers of tubal rupture are rarely imminent, and the avoidance of mutilation should be carefully considered. Dr. Polk, and those who discussed his paper, generally favored conservative measures; notably, Drs. Martin, of Berlin, Bantock, of London, and Emmet, of New York.

"Drainage after Laparotomy," by Dr. Paul F. Mundé, of New York, is also a subject upon which there is much difference of opinion as to certain cases, and a much more general concurrence as to others. A few operators never use drainage, others insert a tube in the majority of cases, and others again, like Dr. Mundé, are inclined to avoid its use more and more, under the test of experience. It is invaluable in some cases, and injurious in others; but the difficulty is, to determine when it may be safely dispensed with. When in a decided doubt as to whether it would be safe to leave it out or not, it is wiser to use it if only for a day. Excellent results have been obtained where it was never used; but, on the whole, patients recover more rapidly where it is employed after the separation of intimate adhesions.

"On the Treatment of the Pedicle in Supravaginal Hysterectomy." In this paper, Dr. George Granville Bantock, of London, advocates the extraperitoneal plan of dressing the stump, claiming a greatly increased success since he gave up the intraperitoneal method. Dr. August Martin advocated the dropping in of the stump. Thus far the latter treatment has had the higher rate of mortality, and particularly so, by sepsis and hemorrhage.

"The Intrauterine Stem in the Treatment of Flexions," is the title of a paper by Dr. A. Reeves Jackson, of Chicago, in which he states that he obtains uterine tolerance by the introduction of bougies, and then makes use of elastic rubber stems of different sizes and degrees of stiffness. He reports a series of sixty-seven cases in which pregnancy followed the

treatment in ten patients; a large proportion of the cases are reported as having been cured.

"Extrauterine Pregnancy and its Treatment by Electricity." Dr. Ely Van de Warker, of Syracuse, reported one case of extra-, and two of intrauterine pregnancy, in which he had used the galvanic current effectually, as a fœticide. The discussion showed that experienced gynecologists at home and abroad fully believe in the possibility of detecting the presence of ectopic fœtal cysts in their early stage, prior to rupture. Mr. Tait denies this ability, it is true, but his claim can have little weight, since he has recently stated before the British Gynecological Society, that he had met with but a single case of tubal pregnancy prior to rupture, and in it he failed to make a diagnosis, "for the woman had not even missed a period;" her "symptoms had been obscure pain of several months standing—in fact, the usual symptoms of salpingitis." In Dr. Van de Warker's case, a complete decidua was passed, and the tubal growth was detected by palpation; the history and symptoms of the case were also such that Dr. Mann, of Buffalo, confirmed the diagnosis of the narrator.

"The Hystero-neuroses," by Dr. George J. Engelmann, of St. Louis, is an exhaustive article occupying 155 pages, or exactly one-third of the text of the volume devoted to original papers and discussions. The volume, as a whole, contains much interesting matter, and well sustains the high reputation of the Society. R. P. H.

DU CATARRHE CHRONIQUE; HYPERTROPHIQUE ET ATROPHIQUE DES FOSSES NASALES, DE L'OZÈNE, OBSTRUCTION CATARRHALE DES TROMPES D'EUSTACHE; VÉGÉTATIONS ADÉNOÏDES DU PHARYNX. TRAITEMENT PAR LA GALVANO-CAUSTIQUE CHIMIQUE.

CHRONIC CATARRH OF THE NARES, BOTH HYPERTROPHIC AND ATROPHIC. OZÆNA; CATARRHAL OBSTRUCTION OF THE EUSTACHIAN TUBES, AND ADENOID VEGETATIONS OF THE PHARYNX. TREATED BY MEANS OF CHEMICAL GALVANO-CAUTERY. By DR. GARRIGOU-DESARÈNNES, Professor of Otology and Rhinology, etc. 8vo. pp. 238. Paris: Adrien Delahaye & Co., 1888.

IN this brochure the author claims to have been the first to establish the electrolytic or chemical galvano-caustic treatment in chronic catarrh of the nares, in ozæna, and in catarrhal narrowing of the Eustachian tube. He has already published his results, but his present object is to lay before his readers the results of a long-continued practice of this method of treatment.

Among those affected by catarrhal inflammation of the Eustachian tubes many are at the same time affected by chronic catarrh of the nasal fossæ, and in many instances the aural lesion is but the consequence of propagation of the naso-pharyngeal lesion. Many of those thus affected think at the outset that their malady is of a trifling nature, referable to a neglected cold in the head, and pay no attention to the nasal catarrh unless it becomes offensive in odor, or unless one or both ears become dull of hearing by extension of the catarrh to the Eustachian

tube. It becomes the duty of the physician promptly to recognize this disease, and in order to prevent its consequences, to apply as soon as possible a treatment to ward off further advance of the catarrh or to cure its bad effects already developed. The aurist, therefore, will often have to confront both nasal and pharyngeal affections. The author believes that in the treatment he sets forth in his book the physician will find an efficacious means of curing these maladies.

He then describes the diseases to which the electrolytic treatment is applicable; first, chronic catarrh of the nares with its forms and complications, then ozæna, catarrh of the Eustachian tube, and adenoid tumors of the naso-pharynx, the symptoms of which closely resemble those of chronic hypertrophic nasal catarrh. Subsequently the method of applying the electrolytic treatment is fully given with illustrative cases.

We must confess that our confidence is somewhat shaken when on page 44 we meet a figure (No. 19) of a machine by which it is proposed to inject vapors into the external ear for the cure of chronic aural catarrh, because it does not seem that such a method is in accordance with the canons of cautious and rational otology.

The form of the electrodes for the nares, long, blade-like implements, suggested by the author for conveying the electric current to the turbinated bones, does not seem free from the character of heroic treatment. This feeling is rather increased and confirmed by Fig. 83, p. 171, which portrays these electrodes *in situ*, in the nose, ready for operation. It is claimed by the author that the method is painless. As this form of treatment is recommended for ozæna, syphilitic disease, and scrofula of the nares, great care certainly should be exercised in always having a large number of fresh, clean electrodes on hand, because the electrolytic current passed through these electrodes is not sufficient, in fact is not intended to be sufficient, to burn them clean.

This treatment is essentially that suggested some years ago by Weber-Liel, of Berlin, and others. Your reviewer can but express again his conviction, attained at that time, that the supposed benefit obtained by this mode of treatment is in reality due to the passage of the catheters, bougies, etc., under the name of electrodes, into the nares and Eustachian tubes. It must also be borne in mind that while the so-called electrolytic treatment is in progress the nares are also treated by sprays, etc., very well calculated to improve their condition. We cannot, therefore, heartily endorse the methods specially set forth in the book we have just reviewed.

C. H. B.

THE PASSAGE OF AIR AND FECES FROM THE URETHRA. By HARRISON CRIPPS, F.R.C.S., Assistant Surgeon to St. Bartholomew's Hospital; late Surgeon to the Great Northern Hospital; Author of "Diseases of the Rectum and Anus," and Jacksonian Prize Essay on Rectal Cancer. 8vo. pp. 77. London: J. & A. Churchill, 1888.

THE result of Mr. Cripps' study of this rare condition cannot fail to be of service to the profession, since he has demonstrated, contrary to all general opinion, that "indisputably entero-vesical fistulæ are far more

commonly the result of inflammatory mischief than due to perforation from cancerous growth. The prognosis and hope of benefit by treatment are thus more favorable than could have been anticipated."

Mr. Cripps's assertion that this condition is an uncommon one, founded upon the fact that he has been able to collect only sixty-three cases, is, in the main, correct, but he forgets that, because of its supposed cancerous origin in all cases, this complication is looked upon by the mass of the profession as not worth reporting. Mr. Cripps has overlooked at least one case which we have ourselves published, and we have also seen three other cases as yet unreported. If, then, one surgeon can, in his own experience, recall four cases, this accident must be commoner than the author believes.

Mr. Cripps scouts the possibility of gas arising in the bladder from decomposition of the urine, and concludes that "the passage of air with the urine is positive evidence of a communication existing, either directly or indirectly between the bladder and bowels."

Of the sixty-three cases quoted in the appendix, two were traumatic, forty-five inflammatory, seven unascertained, and only nine cancerous; this latter unexpected fact being explained by the tendency of the rapidly formed fungoid granulations of carcinomatous ulcers to block up any cavity formed by sloughing or ulceration. Inflammatory perforations have been usually the result of abscesses, which, the author thinks, in the majority of instances, started from "the inflammation set up by accidental perforation of the bowel by fragments of bone or other foreign bodies."

The prognosis is most unfavorable, death occurring in from a few months to about two years, unless surgical interference has been resorted to, except in a small percentage of cases where a spontaneous cure has been effected.

The site of the opening is of the utmost importance, as this must determine the plan of treatment. The communication was with the rectum in twenty-five cases, with the colon in fifteen, with the colon and small intestine in five, unascertained six, while the small intestine was alone affected in twelve instances. The site of primary disease may, in a few instances, be in the rectum, yet the resultant abscess may extend high up, bursting, perhaps, into the ilium, or cæcum, and bladder. In general terms, the fistulæ involve the large twice as often as the small bowel, and are so situated that a left lumbar colotomy will relieve the trouble. It being essential, when possible, to ascertain the site of the bowel opening, a careful examination of the rectum under anæsthesia, injecting milk into the rectum after passing a catheter into the bladder, when the prompt return or the reverse of the milk through the instrument will indicate a rectal or higher opening, and an examination of the character of the fecal matter passed from the bladder, will usually decide the question. "If ill-digested material is passed from the bladder, while, at the same time, the rectal motions contain no undigested matter, the fistula will probably communicate with the small intestine," and *vice versa*.

After mentioning abdominal section and suprapubic cystotomy, colotomy is decided to be the only operation advisable, since, when the small intestine is involved, it is impossible to determine where to make the artificial opening, and it is conclusively shown that the condition after this operation is far more comfortable than is generally supposed. Our personal experience coincides with Mr. Cripps's, and we can testify

to the enormous relief and rapid closure of the vesical fistule after this operation. A milk diet preferably, in any event a simple one, the avoidance of any special article which aggravates the condition—as is not uncommon with some patients—enough opium at night to confine the bowels, with washing out of the bladder, will often render life endurable for these patients, whose suffering is too often truly excruciating.

We trust that from these few extracts our readers will be induced to study carefully this genuine contribution to the sum of surgical knowledge. C. B. N.

A MANUAL OF TREATMENT BY MASSAGE AND METHODICAL MUSCLE EXERCISE. By JOSEPH SCHREIBER, M.D., Mem. of K. K. Gesellschaft der Aertze of Vienna, etc. Translated, with the author's permission, by WALTER MENDELSON, M.D., of New York. 8vo. pp. 285. Philadelphia: Lea Brothers & Co., 1887.

THE book which forms the basis of this notice is a very important contribution to the subject of mechanical therapeutics. Its introductory chapter gives a complete history of the mechanical treatment of disease. The subsequent chapters, which are amply illustrated with woodcuts, treat of massage and its physiological effects, describe the necessary mechanical appliances and bodily movements, the physiological effects of gymnastics on the circulation and the heart, on the skin and kidneys, on the deposition of fat, on respiration, on digestion, and on the central nervous system and mind; and the concluding chapter is devoted to a consideration of the diseases to which mechano-therapy is applicable.

The most bulky and probably the most serviceable part of the work it that which is comprised within the last chapter. In it is discussed the mechanical treatment of neuralgia and muscular rheumatism, of sprains, of chlorosis, chronic catarrhal gastritis, phthisis, neurasthenia, hysteria, hypochondriasis, diabetes mellitus, cerebral congestion, pulmonary emphysema, constipation, chorea, and writer's cramp.

The value of this mode of treatment is thus evidenced by its wide range of applicability. Personally we can speak of its great utility in the treatment of pulmonary affections The most serious of these are unquestionably due to a local and general physiological inactivity. The great mass of people rarely breathe sufficiently deeply to expand fully the lung apices, hence the nutrition and function of these areas are impaired, and their vulnerability to disease is increased. Then, too, this danger is aggravated by the strong tendency in our daily life toward the production of muscular inertia. Years ago muscular locomotion was universal, but now it is greatly superseded by riding in easy carriages, cars, and tram-wagons; manual labor is replaced by machinery; and active outdoor work is supplanted by occupations which demand a quiet and stooped position of the body, and especially of the chest; all of which interfere with the healthy expansion of our respiratory organs. Therefore, under these circumstances, the enforcement of measures which have in view the object of arousing the molecular and passive lethargy of the body, such as massage, walking, running, bowling, pulmonary and

general gymnastics, etc., we have found to be of incalculable benefit in the treatment of these diseases.

There can be no question that mechano-therapeutics is deservedly a most popular and promising branch of the healing art. It is not received with favor, however, as the translator of this work would have us believe, on account of a growing tendency in the profession to discard drug treatment, but because, like everything else, its application and modus operandi are more simple, and hence more comprehensible, than the more complex and intricate action of drugs. T. J. M.

THREE HUNDRED AND EIGHTY-FOUR LAPAROTOMIES FOR VARIOUS DISEASES, WITH TABLES SHOWING THE RESULTS OF THE OPERATIONS AND THE SUBSEQUENT HISTORY OF THE PATIENTS. A RÉSUMÉ OF THE WRITER'S EXPERIENCE IN ABDOMINAL SURGERY DURING THE LAST FIFTEEN YEARS. By JOHN HOMANS, M.D. 8vo. pp. 56, and extensive Tabular Appendix. Boston: Nathan Sawyer & Son, 1887.

THIS little book comes to us much in shape and plan, excepting the addition of tables, like the work of Keith on *Uterine Fibroid Tumors*. But in little else does it resemble the latter, and a severe disappointment awaits the seeker after knowledge who eagerly opens the book, expecting from its title and author to obtain information and experience of the greatest worth. The work presents no novelty, and its principal deficiency is an almost entire absence of conclusions and deductions from such a field of observation as 384 laparotomies should afford. The cases are all most elaborately tabulated, the tables forming more than half the book, but from them no deductions are drawn or percentages made out.

What the book principally tells is that the author has performed a large number of abdominal sections; that, considering that most of the 384 operations were done in private hospitals, he has had fair success with ovarian cysts, and not much more than poor results with his other operations; that he has gone to infinite pains to get his tables stocked with the subsequent progress of the cases, and that he has added very little to our knowledge of the subject of which his work treats.

His method of operating is detailed in the text, but we find it entirely conventional. Next come several pages of general remarks. All of Dr. Homans's ovariotomies, five in number, died until antisepsis was adopted; since that time he has performed 282 ovariotomies with a death-rate of 12 per cent., and once had a run of thirty-eight consecutive recoveries. One-fourth of his ovariotomy deaths he honestly attributes to fault or carelessness of his own. 12 per cent. of the recoveries developed hernia through the wound cicatrix. He believes that post-operative obstruction of the bowels arises from paralysis, due to peritonitis in nearly all instances. Fifteen of the total number of cases were drained, and the author remarks that he is reducing the sizes of his drain tubes. We are inclined to think that many of the cases might have done better had they been drained. No mention is made of any attempt to

save cases developing peritonitis by reopening, washing out, and draining. In a case of hysterectomy the bladder wall sloughed to the extent of a square inch, but the fistula closed after a Sims's catheter had been kept in position continuously for six weeks. Nine cases of ovarian cyst stitched to the abdominal wall recovered. Most amazing, at this date, is the statement that the author has operated upon but a single case of purulent or other salpingitis, or ovarian abscess of gonorrhœal origin!

Next follow 45 pages of detailed histories of selected or "illustrative" cases, which are worth reading for the curious and interesting, but not very instructive, conditions which many of them presented or developed. Then comes the appendix of tables, which bespeak most praiseworthy patience and labor in their compilation, but again suggest falling short of the mark, as the mine is undeveloped, the facts unmarshalled.

In those cases where but one ovary has been removed and children subsequently born, the sexes did not correspond to either ovary.

As this report is the first of its kind of a large number of cases in an American surgeon's practice, it is much to be regretted that the material has not been more efficiently handled and that the results do not compare more favorably with those of other operators of large experience.

T. S. K. M.

THE TREATMENT OF HEMORRHOIDS BY INJECTIONS OF CARBOLIC ACID AND OTHER SUBSTANCES. By SILAS P. YOUNT, M.D., Physician to St. Elizabeth's Hospital, Member American Medical Association, Member Indiana State Medical Society, and Member of the Tippecanoe County Medical Society. Second edition. 8vo. pp. 102. Lafayette, Indiana: 1888.

WE are entirely at a loss to understand the *raison d'etre* of this book, since there are already so many excellent and *scientific* treatises on the same subject. The whole gist of the work consists in two implied or plainly worded statements, viz., that none but a rectal specialist can properly treat hemorrhoids—presumably by preference the writer—and that carbolic acid in very weak solutions is the only proper and scientific treatment for these diseases. Both these propositions we deny, believing as we do, that any hospital surgeon is better fitted to treat rectal cases than the so-called specialist, and knowing that as there is more than one variety of internal piles, so there should and must be more than one method of treatment. We do not deny the advantages of injections with carbolic acid in certain cases, but we do deny that it is the *only* proper method for *all* cases, or that it demands any occult skill or knowledge requiring the printing of a book of over one hundred pages.

C. B. N.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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The Carbolic Acid Treatment of Smallpox.

A recent epidemic of variola at Naples has induced Dr. Montefusco to make trial of carbolic acid in the hospital Cotugno. The treatment has consisted in the topical as well as internal use of carbolic acid, and the results are given in the *Bull. Gén. de Thérap.* of April 15, 1888. The local treatment has consisted in the application of a paste made by mixing carbolic acid with oil and carbonate of lime, which is applied with compresses in confluent patches. He concludes, however, that this practice is no more effective in its results than the mode now in use of water compresses.

The internal use of the remedy, on the contrary, is found to be highly effective. It lessens the fever-heat, and in most cases the temperature remains low. In a few instances a severe rigor preceded a new exacerbation of fever, but no untoward accidents occurred. An impression is made on the eruption also, which becomes smaller in extent, matures earlier, the period of suppuration is shortened, and the scab dries and falls off sooner than is usual.

Inhalation of Vapor of Fluorhydric Acid.

The newest *fad* in inhalation therapeutics is the use of fluorhydric acid vapor. Various mechanical appliances have been proposed for the purpose by Bergeron, Bardet, Dupont, and others (*Bull. Gén. de Thérap.*, March 15, 1888). Whilst they differ in form, the principle remains the same. A reservoir to contain the vapor, a mask to fit over the nose and mouth, and a hand-ball air-pump are the essential parts. Bardet advises mixtures containing fifteen, twenty, and thirty per cent. of the fluorhydric acid of commerce; two *séances* every day, of forty minutes each.

Dr. Jarjavay mentions a simple arrangement proposed by M. Constantin Paul. It consists of a Wolff bottle with two outlets—one for attaching the

inhalation tube and mask, and the other for the inlet tube with air-bag pump. A solution of *fluoride of ammonium, two per cent.*, is put in the bottle containing water Saint Galmier, by means of which the gas is separated.

Other antiseptic gases may be combined with the fluorhydric vapor, as carbonic, sulphydric, etc. The bottles used should be made of gutta-percha, as the vapor, when sufficiently concentrated, attacks glass.

Dr. Jarjavay, in summing up the advantages of this treatment, says that much good is effected by it, although it cannot be considered to cure, using the word in its proper sense. Such symptoms as cough, loss of appetite, insomnia, sweats, expectoration, etc., are rapidly improved.

Resorcin in Ulceration of the Tongue.

The good effects of resorcin, applied to ulcers of the mucous membrane, have been observed for some time. Mr. Maxwell, of Brighton (*The Lancet*, April 21, 1888), publishes a case in which an ulceration of the tongue, having an aspect of malignancy, was much benefited by the same. The method consists in the application of finely powdered resorcin dusted over the surface to be acted on. It may be mixed with bismuth—the salicylate or other combinations, as desired.

Amylen Hydrate.

Additional evidence comes forward as to the hypnotic and antispasmodic action of amylen hydrate (*Centralbt. für die gesammte Therapie*, April, 1888). Dr. Franz Gürtler reports the results of its use in the Königsberg Poliklinik. Formulæ corresponding to those given in our last issue were used. In children it is given in pill with milk or mucilage, and capsules are preferred for adults. The dose varies from two grains in children to eighty grains in adults, and in one case of alcoholic delirium Gürtler gave one hundred grains. The cases in which given with varying, but, on the whole, good results, were alcoholic insomnia, hemicrania, morphiomania, epilepsy, cystitis, whooping-cough, etc.

The Toxic Effects of Tin.

The universal use of tin vessels in domestic affairs renders its action on the human organism especially interesting. It can no longer be regarded as innocuous. Uenger and Bodlander have investigated its action, and find that many articles of domestic use will attack and dissolve the metal (*Zeitschr. für Hygiene*, quoted by *Bull. Gén. de Thérap.*, April, 1888). The salts of tin have an action that corresponds to those of lead, zinc, copper, etc., although less powerful. The administration of powdered tin for the expulsion of round worms, still practised in some countries, is not, therefore, without danger.

The Treatment of the Muscular Atrophy of Phthisis.

One of the professional novelties that make their appearance so often now, is the atrophic degeneration of the muscles of respiration. It is not our province to discuss the pathological relations, but we must call the attention of our readers to the best means of cure. In a communication to the Medical Society

of Bordeaux, DR. BOMPAR gives an elaborate account of the best means of restoring the affected muscles (*Revue de Thérap.*, April 15, 1888). He advocates the use of gymnastic movements according to the method of M. Peter—"the gymnastics of apposition"—by which the muscles of the upper thorax are brought into action. Faradization is also necessary. The faradic excitability of the affected muscles may be much lowered by the atrophy. Several years ago we called attention to the remarkable effects of static electricity in these cases, and more recently of galvano-faradization, as a means of restoring the activity of the respiratory muscles.

ERECTILE TUMOR CURED BY ELECTROLYSIS.

M. BORIES, of Montaubau (*Rev. de Thérap.*, April 15, 1888) reports a case of arterial anginoma cured by electrolysis. The tumor had grown rapidly, and severe hemorrhages had occurred. A daily application for four months, both needles introduced, was the mode employed.

THE ABSORPTION OF LANOLIN.

MUNK (*Therapeut. Monatshefte*, March, 1888) maintains that lanolin has not the property of diffusion through the skin, and hence it can be successful for local use only.

FORMULÆ.

The following combinations (*Rev. de Thérap.*, April 15, 1888) have merit:

℞.—Salol	ʒj.
Ether	ʒj.
Dissolve and mix with elastic collodion	ʒj.—M.

Sig.—For topical use in cracked nipples.

℞.—Lard	ʒj.
Tannin	℈iv.
Acid nitrate of mercury	12 gtt.—M.

For application to old ulcers of syphilitic origin.

MEDICINE.

UNDER THE CHARGE OF

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ON CHRONIC PROGRESSIVE CHOREA. [HUNTINGTON'S CHOREA; HEREDITARY CHOREA.]

Still another group of cases of Huntington's chorea are to be added to those referred to in the April number of this journal. HOFFMANN (Vir-

chow's *Archiv*, cxi. 3, 513) reports in full four very interesting cases. Three of these included two brothers and a sister; the fourth being a female cousin. All were attacked at about the age of thirty to forty years, except one, who developed the disease while still at school, having had epilepsy since between two and three years of age. The family history is briefly as follows: Two men of the oldest generation were probably affected by the disease. Next, the grandfather, Waldi, was choreic for several years before his death between fifty-one and fifty-two. It is not certain whether he was mentally affected. Three of his nine children were choreic. The first was attacked at the age of forty, and became weak-minded. One of her two children became choreic at ten; developed imbecility later, and died at nineteen. Another of Waldi's children showed signs of chorea at thirty, and later became insane. She had nine children, of whom three were the first three patients mentioned, and two others were attacked by the same disease at the ages of thirty and forty respectively. A third choreic child of Waldi's son exhibited the first symptoms at thirty-eight. There was no mental disturbance. His daughter is the fourth of the choreic patients whose case is detailed. The disease, therefore, extended through four generations, and attacked thirteen persons. None of the children of the fifth generation exhibited symptoms, but none is over twenty-four years old. Two of the cases prove that the statement of Huntington is incorrect, that the disease "never begins in youth." Cases of Peretti's confirm this, while some of Huber's show that it may commence after forty years of age.

The disease begins as does chorea minor, but does not end in recovery. The chorea is not made worse by intended movements. Failure of mental power develops later in nearly all cases. If one generation escapes, the disease ceases to occur. The choreic movements are extreme; affect nearly the whole voluntary muscular system; usually cease during sleep. In advanced cases there is some loss of muscular power, and occasionally of sensibility to pain.

Hoffmann then reports another case which developed chorea at forty, and also epilepsy at fifty, and whose mother and three sisters had been epileptics. He believes that it is undoubtedly an instance of chronic chorea, and that the absence of psychic disturbance proves nothing to the contrary, since a case of Ewald's exhibited the same peculiarity. As regards the "heredity," it would seem that epilepsy had taken the place of chorea in the predecessors. This epilepsy differed from the usual hereditary form in that it did not develop in youth, but not until between twenty-six and fifty years of age. It is interesting to note that in this case chorea followed epilepsy, while in one of the others, as already stated, the order was reversed. The author then discusses the association of chorea with other nervous diseases. Since this fourth case proves an exception to the rule of inheritance, he prefers the title "chorea chronica progressiva."

He devotes some attention to the possible anatomical seat of the cause of the disease, but throws no light on the subject.

Significance and Value of the Tendon Reflex.

Buzzard (*Lancet*, 1888, i. 159) says that the tendon reflex is often erroneously reported absent in health, but that if carefully tested by Jendrássik's—

i. e., the "arm tension"—method and not found, we have to do with something pathological.

The absence of knee-jerk signifies organic disease of either muscle, nerve, or spinal cord at its lumbar enlargement; though as a temporary condition it may follow an epileptic fit, an apoplectic seizure, or certain narcotic poisons. Absent knee-jerk due to disease of the muscle is seen in pseudo-hypertrophic paralysis, occasionally in Thomsen's disease, and in cases of the hereditary form of progressive muscular atrophy. Loss of knee-jerk due to disease of the nerve—peripheral neuritis—is seen in diphtheritic paralysis, where it often long persists, in alcoholic neuritis, in diabetes—due often to a neuritis, and in lead-poisoning. In spinal meningitis with involvement and compression of the anterior or posterior nerves at the point of exit; and in rheumatic inflammation of the sheaths of the nerves it is often lost.

Among acute diseases of the cord producing loss of knee-jerk when the lumbar enlargement is involved are transverse myelitis, anterior poliomyelitis, compression myelitis, and softening of the cord; and among chronic disorders are tabes dorsalis, insular sclerosis, tumor of the cord, and chronic atrophy from poliomyelitis. Anterior poliomyelitis shares with disease of the anterior crural nerve the loss of the reflex, but is distinguished from it by the wasting and the absence of sensory disturbance. The return of the knee-jerk renders the prognosis favorable, though it may continue absent after other symptoms have disappeared. Tabes is distinguished from either of these two affections by the fact that though the knee-jerk is wanting the muscles contract perfectly when struck, this being a proof that the cells of the anterior horns are not diseased. The severe pains, also, are rather in the region of the sciatic than in that of the anterior crural nerve. The return of the patellar reflex in cases diagnosed as tabes renders it almost certain that the diagnosis was incorrect; while the very rare persistence from the outset is probably due to a not complete degeneration of the posterior columns. Transverse myelitis from Pott's disease produces loss of knee-jerk when the lesion is situated at the lumbar enlargement; otherwise the reflex is enormously increased. Loss of knee-jerk with the presence of ankle clonus in the same limb renders the existence of insular sclerosis very probable. In spinal progressive muscular atrophy the knee-jerk is absent if the *quadratus* is greatly atrophied; otherwise it is frequently retained or even exaggerated, this being a certain proof in any given case that the disease was primarily spinal and not myopathic. An exaggeration indicates that some sclerosis of the lateral tracts has accompanied the disease of the large ganglion cells.

Increased knee-jerk and ankle-clonus are seen whenever anything removes the control of the higher centres. Thus, epilepsy, which temporarily exhausts the nerve cells of the cortex, produces an ankle-clonus which lasts a few moments. Descending lateral sclerosis, secondary to cortical lesions, produces ankle-clonus in the paralyzed limb. So, also, spastic paraplegia, with its greatly increased knee-jerk, is due to disease of the antero-lateral columns, with which is usually combined some affection of the anterior gray matter, producing atrophy. Carefully to be distinguished from these last affections, as having a much more favorable prognosis, are localized myelitis with the symptoms of lateral sclerosis, compression myelitis from Pott's disease, and the excessive knee-jerk and ankle-clonus which appear a few days after an intra-

cranial lesion. The existence of increased wrist-jerk in these conditions is, however, a much more unfavorable sign. In neurasthenic states, including functional paraplegias, the knee-jerk is often increased and ankle-clonus present. The association of exaggerated patellar reflex with absent plantar reflex in paraplegia, without sensory disturbance, renders a functional affection probable. This is particularly the case if the wrist-jerk be as much increased as the knee-jerk, while no loss of power is complained of in the arms. Inequality of the reflexes on the two sides, with diminishing power, is sometimes an unfavorable symptom. The author believes there is no such thing as a neurasthenic or hysterical loss of knee-jerk.

Clinical and Anatomical Notes on Syringomyelia.

In connection with the elaborate article by Starr in the May number of the American Journal of the Medical Sciences, the paper by Schultze (*Zeitsch. f. klin. Med.*, B. xxx. H. 6, 523) is of considerable interest. He publishes the notes of seven cases; and says that, according to his experience, the disease is not more uncommon than amyotrophic lateral sclerosis; and many cases of the so-called "typical progressive muscular atrophy" are probably instances of syringomyelia.

In a certain number of cases the diagnosis can be as positively made as in examples of multiple sclerosis; while in others there are no characteristic symptoms. Since the formation of cavities usually takes place in the cervical and dorsal cord—he reports a case where the lumbar cord was affected—and destroys the posterior, and, in most cases, the anterior gray matter, there is a probability that there will be a peculiar complex of symptoms. This consists in a progressive muscular atrophy of the upper extremities and shoulders, combined with peculiar disturbances of sensibility, affection of the pain and temperature senses, while the muscular and cutaneous sensibility are not at all or but little affected. Trophic disturbances also arise in many cases. As disease of the posterior and lateral columns, and of the medulla, develops, other symptoms are associated with these.

As regards the differential diagnosis, the muscular atrophy is too limited, and progresses too slowly, to be due to a neuritis of any sort; some kinds of neuritis being further characterized by their localization or diffusion, and some by the other attendant symptoms. The peculiar sensory affections are, in some cases, however, very much alike. Tabes of an abnormal type is distinguished by the long-continued prodromal pain without atrophy, and by the early loss of pupillary and patellar reflexes. Multiple sclerosis and chronic cervical myelitis can hardly be mistaken for syringomyelia. Charcot's hypertrophic cervical pachymeningitis, and widespread and cervical extra-medullary tumors, have more points of resemblance to it, but are distinguished by the initial pain and stiffness of the neck, and the later contractures in the atrophied arm muscles. The symptoms of intra-medullary tumors cannot be distinguished from those of syringomyelia. Amyotrophic lateral sclerosis may resemble it greatly, but the paræsthesias of temperature sense, and the burning pains seem to be wanting, though tearing pains may occur. All cases of slowly advancing muscular atrophy in which burning pains are complained of, should arouse the suspicion of syringomyelia, and should be studied with

reference to the pain and temperature sense. There is a very interesting relation between syringomyelia and unilateral lesion of the medulla; both exhibiting the peculiar disorder of sensation; only probably bilateral in the first disease. Great difficulties of diagnosis arise when large gliomas or sclerosis of different spinal tracts are combined with the affection under discussion; since evidences of complete compression, spastic symptoms, or the signs of involvement of the nuclei in the medulla may be superadded. Trophic affections are of great practical importance, and may be exceedingly severe, such as spontaneous fractures, panarus, etc.

As regards the anatomy of the affection, the author believes that the cavities may arise from supplementary canals abnormally situated, or from the central canal abnormally wide. It can also not be denied that they may develop from the neuroglia, especially when they are not lined by epithelium. He details a case indicating the falsity of the view of Langhaus, that the cavities develop from diverticula which are the result of increased pressure produced by a tumor in the cerebellum. The examination of the muscles in one of the cases showed with certainty only the changes which follow anterior poliomyelitis.

An Atypical Case of Thomsen's Disease (Myotonia Congenita).

C. L. Dana (*Medical Record*, April 31, 1888) describes an atypical case of this rare disorder occurring in a male, aged thirty-five. The family history of the patient was good with the exception of some spinal disease in the sister; and the personal history was also good. The disease commenced at the age of twenty with stiffness of the hands; later of the legs and of the muscles of mastication and deglutition. Recently the patient finds he tires easily; especially in the arms. Examination shows good muscular development, with apparent pseudo-hypertrophy of the biceps and calf muscles. Tonic contractions of the muscles lasting a few seconds occur after action, and require some effort to overcome them. They are seen in the biceps, muscles of the calves, and pillars of the fauces. If, however, the hand is tightly closed for several minutes, the spasm relaxes, and it can be opened readily.

On striking the muscles of the arms, shoulders, and lower extremities, a welt of muscular contraction appears and lasts for five or ten seconds. Electric sensibility is diminished; the faradic contractility normal or increased; the galvanic contractility increased; there is no reaction of degeneration. The knee-jerk is lessened; there is a slight bilateral ptosis; slight muscular anæsthesia; aching pains in the legs; apparent vasomotor weakness; an increased secretion of saliva. No other change of importance is recorded. Microscopic examination of a piece of excised mucle revealed some of the changes characteristic of Thomsen's disease; viz., increase of nuclei and fissuring of the muscle fibre.

Empyema after Fibrinous Pneumonia.

Though admitting that purulent effusions after croupous pneumonia occur but seldom, Penzoldt (*Münch. med. Wochensch.*, 1888, 227) has been led to believe that this accident is commoner than ordinarily supposed to be, by the fact that he has recently seen seven cases. The course of the pneumonia

in all the cases was severe, and in some of them the failure of the temperature to fall to normal at the time the local symptoms indicated the crisis, showed that there was some unusual influence operating. But this sign often fails, and no other symptom indicates the presence of pus. It is, therefore, very important in all cases where dulness and bronchial respiration persist, with some evidences of fever and diminution of strength, that an exploratory puncture be made at once. Such a procedure cannot possibly do harm, and may be the means of saving the life of the patient. The author says that by the neglect of this means of diagnosis he has, in past years, failed to discover the existence of an empyema after pneumonia, or found it too late in a few cases. Sometimes the puncture fails to reveal pus which is present. This may be due to adhesions of the pleura in places. The syringe, too, may be at fault; the needle being too short or too fine, or the suction not being good. On the other hand, if any carbolic acid solution be allowed to remain in the needle or the syringe, it will coagulate a serous exudate, and create the false impression that the fluid is purulent. It is, therefore, well to wash the syringe with pure water after its disinfection. After pus has been discovered, resection of the rib is probably the surest means of treatment, if the amount of fluid is considerable.

As regards the cause of the empyema, it seems most probable to the author that in these cases there are associated with the active infectious agents producing pneumonia those causing suppuration; and that the latter penetrate the pulmonary pleura in some way.

Cerebral Symptoms in the Pneumonia of Children.

Holt (*Medical Record*, April 7, 1888) has analyzed 173 cases of pneumonia in children with reference to the occurrence of cerebral symptoms. All but 13 were under five years of age, 34 cases (20 per cent.) presented these symptoms, namely, convulsions in 14, delirium in 12, other cerebral symptoms in 8. The convulsions of pneumonia did not differ from those of other acute diseases, and in one-half the cases they occurred with the invasion; in the others toward the close. Delirium was rare in the first two or three days; most marked at the height of the disease (fourth to seventh day). In the mild forms it was an incoherent rambling during sleep; in the severe forms it was sometimes low, muttering; more commonly wild and excited, and accompanied by all the symptoms of cerebro-spinal meningitis. Other patients had semi-stupor alternating with great irritability, simulating tubercular meningitis very closely.

The diagnosis of cases of cerebral pneumonia from meningitis is the question of the most importance. The chest should be examined thoroughly and repeatedly, since positive physical signs sometimes appear late. Cough is usually present, but its absence in the first two or three days is of little diagnostic value. Activity of the alæ nasi is rarely absent in pneumonia, but may be seen in other conditions. Alteration of the pulse-respiration ratio, with acceleration of the respiration, is the most important symptom. Irregular respiration is almost never seen in pneumonia, the *slow*, irregular pulse of meningitis does not occur, and localized paralyses are not met with. The knee-jerk is usually lost in meningitis, while the author does not know that its absence has ever been recorded in pneumonia. The course of the case

nearly always clears up the diagnosis, since the cerebral symptoms of pneumonia are not so severe or so continuous as those of meningitis. The diagnosis is impossible between broncho-pneumonia with cerebral symptoms and pulmonary tuberculosis with a few tubercles in the brain.

As regards the etiology of the cerebral symptoms, the great predisposing factor is the susceptibility of the nervous system present in early life. All but one of the fourteen cases of convulsions occurred under two years of age. Delirium was more common between four and eight years of age. High temperature was a common cause of the cerebral symptoms; especially of delirium and stupor. The constitution of the patient appears to have had but little influence, except that convulsions were more common in delicate children. The form of the disease is a factor of importance; the frequency of the cerebral symptoms appearing to be proportionate to the abruptness of the onset. The author has studied the influence of the location of the disease with some care and is convinced that the supposed special disposition to cerebral symptoms in apex pneumonia does not exist. It is the extent rather than the location which is the factor in producing nervous symptoms.

As regards prognosis, we may conclude that with the exception of late convulsions, the evidence of cerebral affection does not much increase the danger of the disease. For treatment the author recommends the cold pack in hyperpyrexia, and antipyrin to quiet delirium, restlessness, and cough.

Researches on the Etiology of Infectious Endocarditis.

Vinay (Lyon *Médical*, March 25, 1888) relates a case of infectious endocarditis developing suddenly in an elderly man with arterio-sclerosis, and proving fatal in two months. The autopsy showed no lesion of the body to which the verrucose change of the endocardium was secondary. Culture and inoculation experiments, made after the death of the patient, revealed the presence of the *staphylococcus pyogenes aureus* in the vegetations. The author then enters into an extended review of the researches which have been carried on during the last three years on the nature of the pathogenic agent in infectious endocarditis, and concerning the possibility of reproducing the malady in animals. After quoting largely from the literature of the subject, he concludes that the disease is not caused by a single agent, but owes its origin to one or more of several forms of microörganisms, which have, however, a common characteristic; viz., the power of producing suppuration. This variation in the cause does not in the least destroy the unity of the septic affection, whether appearing as a primary disorder, or as secondary to one already existing, since the cause is sufficiently uniform, the symptoms very well marked, and the clinical significance very grave.

The Pathological Significance of the Auscultatory Sounds in the Crural Arteries.

Hochhaus (*Virchow's Archiv*, Bd. cxi. H. 3, 497) reviews quite carefully what has already been written on the subject, details the results of his own studies on 506 cases of various diseases, and draws the following conclusions: I. Pressure murmurs and pressure tones may be detected in the crural artery both in normal and pathological conditions, and only in atheroma can

they usually not be produced. II. A spontaneous tone (*i. e.*, heard without any compression of the artery) is heard: 1, always in aortic insufficiency, on account of the increased expansion of the artery produced by the action of the hypertrophied left ventricle; 2, always in uncompensated mitral insufficiency, anæmia, and febrile affections on account of the great difference between the tensions of the systole and diastole of the artery. III. Traube's double tone is, according to the author's experience, rare in aortic insufficiency; a diastolic double tone is more common, due to an interrupted contraction of the ventricle. ("Diastolic" applies to the artery, meaning its period of dilatation.) IV. A diastolic and systolic double murmur is heard in all well marked cases of aortic insufficiency, and often in aortic stenosis and insufficiency. It is of diagnostic import for the latter affection, although it occasionally occurs in typhoid, anæmia, and atheroma. V. With the exception of aortic insufficiency, the results of auscultation of the crural artery are without diagnostic or prognostic value in any of the diseases which the author studied, and probably this applies to all diseases.

ON THE CONDITION OF THE GASTRIC SECRETION IN FEBRILE DISEASES.

Realizing the importance of a proper diet in fever, and that this depends on our knowledge of the capability of the stomach to digest in febrile affections, Wolfram made some studies on the nature of the gastric secretion in this condition, and the results of these experiments GLUZINSKI now reports (*Deutsches Arch. f. klin. Med.*, Bd. xlii. H. 5, 481). After reviewing some of the experiments which have been published by others, and giving tabular statements of some of Wolfram's cases, which numbered fifteen in all, he concludes that as far, at least, as any deductions can be made from so small a number of cases, they should be divided into two groups. In the first, the acute infectious diseases, the gastric secretion contained no HCl, except at the terminal stage of typhoid fever. It also possessed no power of digestion, either within or outside of the organism; though on the addition of acid it artificially digested quite well, thus proving that the fault did not lie in the absence of pepsin. With the cessation of fever, or a little later, the digestive power returned.

In the second group, the chronic febrile diseases, the digestive strength remained normal even during the course of the disease. It would seem, therefore, probable that it is not the elevation of temperature so much as the nature of the infection which influences the nature of the gastric secretion. Even more true is it that digestive power is normal in the non-infectious diseases, and wanting in those of an infectious nature. It is evident, therefore, that the treatment should consist in the administration of HCl; and that forced feeding may be employed in chronic cases, with the hope that digestion will take place.

ON THE DIAGNOSIS AND THERAPY OF ROUND ULCER OF THE STOMACH.

GERHARDT (*Münchener med. Wochensch.*, 1888, 239) says: Injuries of the gastric mucous membrane heal rapidly. Round ulcer is a chronic ulcer, whose chief characteristic is its persistency, and there must, therefore, be some other cause for this persistency besides the loss of substance. This is usually

sought in an excessive gastric secretion, or in the action of injurious food or medicines, and where these are not the agents certain microörganisms are perhaps at fault. It is a common disease, and cicatrices are found in one-tenth of all autopsies made. Cicatrices are three times as common as open ulcers; recovery, therefore, occurs with relative frequency. Hematemesis is absent in the majority of cases, besides being a symptom of other affections also. The seat of the ulcer is in twenty per cent. of the cases in the space between the pylorus, the lesser curvature, and the posterior wall. It is not correct to say that the absence of tumor is one of the most important negative symptoms. Tumors are frequent, due to: 1, old callous ulcers, especially when situated in the anterior walls; 2, excessive thickening of the pyloric muscle, a very common cause; 3, masses of exudate lying on the gastric wall, rare; 4, the projection of other organs through a perforated ulcer. Hyperacidity is usually present, but there are cases in which no HCl is to be found; and the acid is sometimes seen in carcinoma. The duration may be from twenty-five to thirty years, and intermissions in the symptoms are frequently mistaken for recovery and relapse. Pain is rarely absent, and has the greatest diagnostic value when *not* situated at the xiphoid cartilage, and when dependent on the nature of the food, the time of eating, and the position of the body. Dilatation of the stomach indicates that the ulcer is at the pylorus; contraction, that it is at the cardia; intermittent rigors, that the spleen is involved; tenderness on pressure and absence of hemorrhage, that the anterior wall is affected; pain in the back and hemorrhage, that it is the posterior wall. A patient who abstains from food on account of pain, and thereby becomes emaciated, is probably suffering from an ulcer, and not from a carcinoma. The periodical weighing of the patient is very important for purposes of diagnosis.

Lipogenic Diabetes.

The occurrence of transient glycosuria in fat persons is a matter of common observation among those who systematically examine all specimens of urine for the presence of glucose, and in such individuals the symptom is not usually looked upon as one of grave significance. But a more careful examination of statistics seems to show that this lipogenic glycosuria is not infrequently followed by a true diabetes. Wisch (*Berliner klinische Wochenschrift*, 1887, No. 46) has made a careful investigation of this question with interesting results. In more than one-half of the cases of marked obesity of hereditary origin which came under his notice, diabetes developed after varying periods of intermittent glycosuria. The striking association of lipomatosis with diabetes is illustrated by three genealogies, each one going back three generations. The frequent association, too, of gout with lipogenic diabetes—familiar to all who see much of either disease—is dwelt upon.

Regarding the pathogenic relation of diabetes to obesity, Wisch looks upon the diminished power of the fat-infiltrated muscle cells to convert sugar into glycogen as the cause of the diabetes. Stated broadly, his view is that there exists a congenital abnormality of the metabolic function of the cells which prevents their disposing, by combustion, of the fat within them, and that the resulting accumulation of fat leads secondarily to an inability to dispose properly of the glucose.

In the importance which he ascribes to the muscles in the causation of this form of diabetes (but little weight is given to the part the fatty liver may play in it), Wisch is in accord, in many particulars, with numerous other observers, such as Senator, Zimmer, Ebstein, Seegen, etc.

Influences of Diet on Albuminuria.

The clinical experience of the benefits to be derived from the use of a milk diet in albuminuria has recently been experimentally confirmed by Oestreich (Dissertation, also *Centralblatt f. d. med. Wissenschaft*, 1888, No. 6). In a patient with albuminuria, œdema of the feet and ascites, living on a mixed diet, there was eliminated by the urine, in the course of twenty-eight days, between 0.1 and 0.9 per cent. of albumin, or a daily quantity of from 20 to 120 grains, the determinations being made with Esbach's albuminometer—which, be it observed, gives but approximately correct results. During the next seven days the patient was put upon a meat diet, consisting of meat, two eggs, bouillon, bread and coffee; when he eliminated but 0.17 to 0.2 per cent. of albumin, or a daily quantity varying from 25 to 75 grains. Then for eighteen days a milk diet, composed of one quart of milk, soup, bread, bouillon, potatoes, and green vegetables was used, with the result that the urine contained from 0.1 to 0.25 per cent. of albumin, or a daily quantity of from 18 to 80 grains.

It will readily be seen, therefore, that a meat or milk diet—and of the two, especially the milk diet—has more effect in diminishing the daily quantity of albumin lost than has a mixed diet.

Cyclic Albuminuria.

Cases of albuminuria occur, writes Pavy (*Lancet*, April 14, 1888), without having at their foundation anything of a grave nature. The albumen in the urine, not infrequently accompanied by crystals of oxalate of lime, is the only phenomenon which can be recognized, as far as symptoms and physical signs go. Mental states, exercise, immersion of the body in cold water, and the ingestion of food have been named as possible causes of this condition. In a considerable number of cases, too, intermittent or continuous albuminuria is present, without any cause whatever being discoverable, and without the development of any signs of Bright's disease. There is a very sharply defined form, viz., "cyclic albuminuria," which is characterized by the persistent occurrence of albumen in the urine at a fixed period in the day, while it is as uniformly absent at another time. On rising in the morning there is no albumen in the urine; in an hour or two it appears and increases in quantity for a while, then diminishes and disappears before the day is over. The ingestion of food or the employment of cold water bathing has no influence upon it; but if the recumbent position is maintained in bed during the day, the albuminuria does not appear. It is the upright position which is the factor in determining the escape of albumen in these cases.

Cyclic albuminuria must be carefully distinguished from the condition seen sometimes during recovery from acute nephritis, where rising from bed causes a reappearance of the albumen in the urine. The previous history of

the case will aid us in distinguishing between them. The functional disorder appears to have no tendency to become organic; its treatment with drugs is unsatisfactory, and we must attend simply to the hygienic condition of the patient. A correct recognition of the disorder is the most important matter connected with it, and as aid in this respect the author would call attention to a condition of the urine, to which, however, he would not attribute too great diagnostic value. In structural renal disease, namely, it is rare to find any proteid substance in the urine which is precipitated by organic acids. In cyclic albuminuria, on the other hand, it is the rule that such a precipitate be produced. Two proteid substances are present in such cases, one of which is precipitated by the citric acid used in the first stage of the ferrocyanide test, and the other, the serum-albumen, on the addition of the potassium salt.

SURGERY.

UNDER THE CHARGE OF

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Cerebral Surgery.

Dr. David Ferrier and Mr. Victor Horsley report (*The British Medical Journal*, March 10 and 24, 1888) a case of cerebral abscess in connection with otitis media successfully diagnosed and evacuated. The patient was a man, aged forty-seven, who had been ill for a month, his troubles beginning with an offensive discharge from the left ear, gradually followed by drowsiness, aphasia, delirium, slight facial paralysis, and optic neuritis, leaving no doubt that the patient was suffering from a cerebral abscess. There was a spot tender to pressure and percussion situated two inches above and just anterior to a line drawn upward from the external auditory meatus. The comparatively rapid onset of symptoms indicative of cerebral mischief in a man previously in good health, coincidently with signs of inflammation and purulent discharge from the left ear, were in favor of abscess rather than tumor. There had been no vomiting, convulsions, or febrile disturbance, or other indications of meningeal inflammation. The fact that there had been no rise of temperature did not exclude the idea of encephalitis resulting in abscess, for many cases of cerebral abscess appear to run their course without causing febrile disturbances, the temperature being in some rather subnormal than the reverse. The position of the abscess, verified by the operation, was determined both from the symptomatology and the position of the pain experienced on percussion. The relative weakness of the right angle of the mouth, the ataxic speech, and slight degree of word-deafness, indicated that the disease was situated in close proximity to the speech and auditory centres of the left hemisphere, but not actually destroying them; and the conditions

of such a lesion would be supplied by an abscess situated in the anterior third of the temporo-sphenoidal lobe and abutting or pressing on the fissure of Sylvius. This localization from symptomatology was confirmed by the discovery of a spot, tender on pressure and percussion, coinciding in position with that part of the superior, or superior and middle, temporal convolution which lies immediately posterior to the ascending limb of the fissure of Sylvius, and below the inferior extremity of the ascending frontal convolution. The position of the tender spot is not by itself a safe guide to the localization of abscess or other cerebral disease, for the pain may be referred to a region at a considerable distance from the disease. Thus, Mr. Hulke (*British Medical Journal*, July 3, 1886) records a case in which there was a tender spot above the ear, whereas the abscess was in the cerebellum; and in a second, pain was felt acutely in the occiput, whilst the abscess was in the temporo-sphenoidal lobe. The pain, however, was useful confirmatory evidence.

An operation was decided upon, and performed by Mr. Horsley on the following day, five drachms of pus were evacuated, a silver drainage tube was left in place for a few days, and the patient made a rapid and almost uninterrupted recovery.

Mr. Thornley Stoker reports (*British Medical Journal*, April 7, 1888) an interesting case of subcranial hemorrhage treated by secondary trephining. A man, aged fifty, was brought to the hospital with left brachial motor-monoplegia, very slight left-sided facial paralysis, and in a condition of stupor. There was a bruise of the scalp. No history was obtainable. He became profoundly hemiplegic and comatose, and the following diagnosis was made before the operation, which was performed nine days after his admission.

1. Hemorrhage over the right motor area, between the bone and dura mater, probably due to laceration of the middle meningeal artery or one of its branches, most likely associated with fracture, and producing the partial left paralysis which at first existed. 2. Subsequent increase of the hemiplegia, either due to renewed hemorrhage or to that sudden yielding of brain function which is repeatedly seen in both hemorrhages and serous effusions which have existed for some time, even though no additional mechanical pressure is called into play. The existence of the scalp injury over the upper and back part of the motor area was of less value in indicating the seat of pressure than the opposite paralyses, which pointed clearly to the engagement of the greater portion of the right motor area, including the extensive surface occupied by the cortical centres for the various parts of the upper extremity, the face, and tongue, and lower extremity, the interference with them being in the sequence in which they are written.

As to the assumption that the pressure was cortical, and not apoplectic, it was founded on the belief in the absence of any sensory paralysis, and the teaching on that point so well expressed by Ferrier, who says that "strictly cortical lesions of the motor area do not cause anæsthesia in any form, and it may be laid down, as a rule to which there are no exceptions, that if anæsthesia is found along with motor paralysis the lesion is not limited to the motor zone, but also implicates, organically or functionally, the sensory tracts of the internal capsule, or the centres to which they are distributed." The cortical nature of the pressure was further supported by the existence in the

early stage of the case of a brachial monoplegia, as it is well established that monoplegia is a condition due to interference with the cortex and not usually found in more deeply seated lesions.

Mr. Stoker accordingly operated by trephining over the fissure of Rolando, found and removed a large clot, and the patient recovered uninterruptedly.

He was able to arrive at a conclusion justifying a useful operation by two circumstances; first, that he could, independently of any knowledge of a fracture enabling him to localize the hemorrhage, put his finger over the motor area and say with sufficient accuracy, "There is pressure here over the cortical centres for the upper extremity; it extended downward and forward to those of the face; it afterward reached upward to those for the lower extremity." The sequence is anatomically perfect. First, a brachial monoplegia; then as the blood or pressure effect extends, a facio-lingual; and finally, a crural paralysis. Independently of these points, the case, as one in which no defined bone lesion served to localize the hemorrhage, belongs to a class sufficiently rare to deserve notice.

Sir William Stokes (*Ibid.*) relates two cases in which he trephined for traumatic subdural abscess, and after reviewing the details of the chief recorded cases, comes to the following conclusions:

1. That after the primary symptoms of cerebral traumatism had subsided, there was frequently a latent period of varying length, during which there were no distinct brain symptoms connected with abscess formation whatever.

2. That their appearance, as a rule, was sudden, and, if uninterfered with, they ran a rapidly fatal course.

3. That the occurrence of pus production resulting from cerebral traumatisms, was not incompatible with a perfectly afebrile condition.

4. That this latter fact would probably aid in differentiating traumatic cerebral abscess from meningeal or encephalic inflammation.

5. That both as regards color and consistence, there was great variety in the contents of cerebral abscess cavities, and that, as shown in Wilm's case, published by Rose, of Berlin, they might be transparent.

6. That antisepticism has largely diminished the risks of the operation of trephining.

7. That having regard to the great mortality of cases of cerebral abscess when uninterfered with, namely, from ninety to one hundred per cent., the operation was indicated even when the patient was *in extremis*.

8. That in cases where the trephine opening did not correspond to the situation of the abscess, exploratory puncture and aspiration might be employed.

9. That by the adoption of this measure the necessity for multiple trephine openings could be largely obviated.

10. That the employment of a blunt-pointed aspirating needle, as suggested by Rentz, was probably the safest mode of exploration and excavation.

11. That drainage was desirable in the after-treatment of such cases.

12. That both during and subsequent to operative interference in these cases a rigid antisepticism was imperatively required.

Mr. C. B. Ball also reports (*Ibid.*) a case of traumatic aphasia successfully treated by trephining and removal of a blood clot from the interior of the cerebrum.

Mr. Arthur E. Barker, in the *British Medical Journal* of April 14, 1888, reports a case of cerebral suppuration due to otitis media, diagnosed and successfully treated by trephining and drainage. The patient, a man, æt. thirty-three, had had a purulent discharge from the right ear, pain on that side of the head, a temperature of 99° to 100.5°, vomiting, epileptiform convulsions, transient coma, then partial left hemiplegia, etc. The mastoid was trephined without results, excepting reduction of temperature. These facts seemed to point to a localized meningitis, and as the paresis had started in the left side of the face, and had spread to the left arm, etc., the indications were that the lesion existed in and about the junction of the middle and lower third of the right ascending frontal and parietal convolutions. Mr. Barker thought that the six other serious conditions which he finds to arise from otitis media might be excluded, because

1. Mastoid cell abscess had already been excluded by the operation of trephining the mastoid, and the subsequent persistence and aggravation of the symptoms.

2. Plastic phlebitis of the lateral sinus, with thrombosis, appeared also to be negatived by the course of the temperature, the absence of rigor, and of any swelling in the course of the deep jugular vein and side of the face. The temperature, raised before the opening of the cells and thorough cleansing of the tympanic ramifications, had shown a general inclination to fall slightly but steadily.

3. Pyæmia was negatived in much the same way, also, by the absence of secondary deposits, as well as by the general aspect of the patient.

4. Subdural abscess, besides being less likely to form in an adult, and especially in one who had no evidence of definite caries in the ear, would probably have led by this time to œdema of the overlying skin, which was conspicuously absent, and probably have been ushered in by a rigor, and have kept the temperature steadily higher than was the case.

5. Cerebellar abscess, besides its relative rarity, seemed improbable from the history of the case—that is, the character of the ear mischief and the absence of caries of the tympanum; and although it was suggested that right-sided fits at the commencement of the intracranial complications might be explained by cerebellar disease, the gradual onset of facial and arm paralysis, with twitchings of the wrist, appeared to him to give a clear indication of the situation and the nature of the lesion, as near the motor areas of the cerebrum.

6. Abscess in the temporo-sphenoidal lobe again seemed alone to be insufficient to account for all the symptoms present.

Adhering to the diagnosis of inflammatory effusion in the situation given above, Mr. Barker trephined over the fissure of Rolando—one and a half inches above the Sylvian fissure—finding and evacuating about an ounce of pus. The patient recovered almost completely.

Mr. F. A. Heath reports a case (*The Lancet*, April 7, 1888) of cerebral tumor, in which the diagnosis was based on the following circumstances: On admission, the patient had a fairly healthy aspect, but did not seem to be very intelligent. Atrophy of the optic disk on the right side and commencing atrophy on the left were found on examining the eyes ophthalmoscopically. He could not smell camphor with his right nostril, but could with his left. His face appeared to be somewhat drawn to the right side, and the distortion

was still more apparent when the patient laughed or endeavored to show his teeth. The left arm was distinctly weaker than the right one. He could send the dial of the dynamometer through only fifteen divisions on the left side, as compared with thirty on the right. The left leg was also much weaker than the right, he himself having often noticed that he limped with it, and that it got tired before the right. There was no anæsthesia anywhere. The calf of the left leg measured eleven inches and a quarter, and that of the right eleven inches and a half. These symptoms might be accounted for by disease situated on the right side of the brain. Since the head, arm, and shoulder on the left side were convulsed during a fit, it is inferred that the upper part of the ascending frontal convolution on the right side of the brain was implicated in some way. Then, again, since the latter attacks always began with unconsciousness, it was concluded that the mischief was situated somewhere anterior to the ascending frontal convolution, and pressed back on the motor nerves. Loss of smell on the right side likewise favored this conclusion. This opinion was further confirmed by the fact that there was a spot tender on percussion, about an inch and a half behind the external angular process of the frontal bone, and two inches up from the zygoma. Mr. Heath trephined on the tender spot, and exposed a tumor so deeply seated and firmly fixed to the base of the anterior fossa that further operation was deemed inadvisable. The patient at the date of report, eighteen months later, was somewhat worse.

Suppuration and Septic Diseases.

The concluding lecture of the admirable series on the above subject, delivered by Mr. W. Watson Cheyne, at the Royal College of Surgeons, is published in the *British Medical Journal* of March 10th. His views may be summarized as follows; With regard to the factors involved in the production of suppuration and of septic diseases, while there can be no doubt that the pyogenic organisms are essential, yet in many cases much depends on other conditions, of which the chief, probably, are the dose or number of the organisms and their concentration, general and local depression of vitality, and the seat of inoculation. If the organisms enter in large numbers, sufficient to overcome the resistance of the body, they alone may cause the disease; frequently, however, they enter in smaller numbers, and then other conditions become necessary to enable them to act. Of these conditions the chief are depressed vitality, either local or general, combined with the possibility of their remaining in the weakened tissue. This depression of vitality may be brought about by conditions acting on the body generally, such as acute fevers; or by local conditions, more especially those which induce the early stage of inflammation, such as cold, injury, chemical substances, the products of the bacteria themselves, or the products of other kinds of bacteria which may happen to be growing along with them. Or, again, the favorable condition may be some peculiarity in the soil, as shown by variations in the character of the disease in accordance with the seat of inoculation or the anatomical arrangement of the part. The only factor, however, with which we can reckon with certainty, is the cocci themselves. These organisms are fairly widely distributed outside the body. In the air they have been found on only a very few occasions, and in very small numbers.

Staphylococcus pyogenes aureus has been found on one or two occasions in the air of surgical wards, as has also the streptococcus of erysipelas. Experiments have been made as to the presence of the latter organism in the air of wards in which erysipelas patients were present, and they have in one or two instances been found in small numbers; as a rule, however, they are apparently present only when the patients are in a state of convalescence, and when desquamation of the skin is occurring, and it seems highly probable, from the observations that have been made, that they are carried in the cutaneous scales thrown off during desquamation. Erysipelas cocci have been found in a post-mortem room where cases of erysipelatous infection had occurred, and in this case the infection was supposed to have come from the floor. The pyogenic organisms are very rarely present in putrefying liquids, but they have been found on decomposing beef, and in the water employed in kitchens for rinsing dishes; they are also sometimes present in the superficial layers of the soil. One of their most common seats, outside the body, is the surface of the skin, and they especially occur in parts where the skin is moist, for example, in the axillæ, between the nates, between the toes, etc.; they are also frequently present in connection with the hair, and in the dirt under the nails. Fränkel has found them in the secretions of the healthy pharynx, and Bockhardt found "aureus" and "albus" in large numbers in the nasal mucus of a patient suffering from chronic catarrh of the nose, and at the same time affected with sycosis of the upper lip.

As regards the entrance of these organisms into wounds, they may get in during an operation from the air, from the instruments and hands of the operator and his assistants, from surrounding objects, or from the skin in the neighborhood of the wound. We are now, however, sufficiently acquainted with the various precautions necessary to prevent these organisms from entering, and it is a comparatively easy matter to leave a wound made through a previously unbroken skin without any pyogenic organism in it.

In the after-treatment of wounds there are two situations where the battle with these parasites may take place; it may either occur outside the wound, the organisms never being allowed to enter it, or it may take place inside the wound after their entrance has been permitted. Antiseptic dressings are not, in their essence, applications to wounds; they are applications to the discharge which has come from the wound and the skin surrounding it.

As to the mode of entrance of these pyogenic organisms after the operation, they may get in while the dressing is being changed, either by falling from the air, though this must be of rare occurrence, seeing that they are so rarely present in the air, or by contamination with the surgeon's hands, instruments, etc., but this is also very easily avoided, and should not occur. Usually they are admitted either through the dressing or beneath it during the interval between the change of dressings. They most commonly spread by growing in the discharge which is lying between the dressing and the skin, and in the superficial layers of the epidermis, more especially in the latter; for as the result of the irritation of the antiseptic employed, there is hypertrophy of the epithelium, and thus a large number of dead epithelial cells are present, which, being soaked with the discharge, form a good nidus for the development of bacteria, unless, indeed, enough of the antiseptic has been communicated to the discharge and the epithelium from the dressing, to render it an

unsuitable soil for the growth of organisms. If this is not the case, the organisms will go on growing in the substance of this dead epithelium, protected by the superficial layers from the action of the dressing, and thus they may, if a dressing is left on for too long a time, ultimately reach the wound. This is not a mere theoretical speculation, for Mr. Cheyne has been able to trace the development of the organisms beneath the dressings, from their margin toward the wound, the extent to which they spread varying with the length of time that the dressing has been applied.

If these views as to the mode of entrance of bacteria in wounds are correct, it follows that it is very important when a dressing is changed to wash and thoroughly disinfect the skin around the wound as far as the dressing extended, and beyond it, with an antiseptic lotion, care being of course taken, by covering up the wound, not to infect it while so doing. If this is done, then at each change of dressing the field of battle is transferred from the neighborhood of the wound to the margin of the dressing, and in accordance with the size of the dressing this battlefield will be at a greater or less distance from the wound.

We have now at our command a large number of antiseptics, which more or less answer the purposes required, and it is only by careful attention to the exclusion of these organisms that we can obtain the best results. That we can completely exclude these bacteria from wounds, both at the operation and afterward, has been ascertained by numerous experiments; and just in proportion as we are successful in so doing, we are to a like degree freed from the occurrence of suppuration and septic disease, and can to a like degree reckon with confidence on rapid and painless healing of wounds with the least disturbance to the patient.

Two Cases of MacEwen's Operation for the Radical Cure of Hernia.

Dr. G. H. Monks reports (*Boston Med. and Surg. Journ.*, March 22, 1888) a case of a woman, sixty-three years of age, in whom a complete inguinal hernia of the left side became so large and troublesome, and was with so much difficulty retained by means of a truss that a radical operation was decided upon, and was done in the usual way. The sac was puckered up by a continuous suture of stout chromicized catgut, and fastened in the internal abdominal ring. The walls of the canal were then drawn together, so that the conjoined tendon and Poupart's ligament were closely approximated. It then became evident that it was impossible, on account of the size of the cavity left after the removal of the sac, to sew up the wound in the usual way, without leaving pockets. A large number of sutures of fine catgut were, therefore, buried in the wound, and the margins of the wound brought together with a continuous silk suture. No drainage was used. The superficial portions of the wound failed to unite, but healed slowly by granulation, and there had been no sign of the recurrence of the hernia up to the date of reporting, about three months later.

Dr. Royal Whitman reports (*Ibid.*) a case of congenital inguinal hernia in a boy eleven years of age. The sac of the hernia was dissected out, divided above the testicle, separated from the cord, and returned to the abdominal cavity, the lower segment being sewn together to form a tunica vaginalis.

The sac was attached to the abdominal wall after the method of MacEwen. The patient recovered, and, eight months later, there had been no return of the hernia.

Resection of the Ankle-joint.

Dr. A. T. Cabot recently showed at the Boston Society for Medical Improvement eight cases of resection of the ankle-joint, for caries of the tarsal bones, probably tuberculous in character. In all the results were good. He believes that in regard to the operation the most important indication is the thorough removal of all diseased tissue, osseous, cartilaginous, and synovial. In his earlier cases he often tried to limit the operation to the parts evidently diseased, and scraped out the softened portions with a sharp spoon. In dealing with the small bones, however, the parts left almost certainly became affected with the disease, and had subsequently to be removed, so that, later, he had adopted the plan of removing the whole of any small bone which showed unmistakable caries. The only exception to this rule was made in cases of caries of the os calcis, in which the disease seemed to be wholly extra-articular. The metatarsals were treated by the removal of the diseased ends. As to the tibia and fibula, there are strong reasons for trying to save all the healthy bone possible: first, because interference with the epiphyseal cartilage affects the future growth of the limb, and may unnecessarily add to the shortening; and, second, because the malleoli, when they can be preserved, add greatly to the strength and steadiness of a new joint. The shortened foot falls in between them, and they give much lateral support. It is, therefore, better, when possible, thoroughly to scrape out the diseased tissue in these bones, and not, except in extreme cases, to saw off the ends evenly. After the removal of the bones the diseased synovial membrane should be carefully dissected out. In the after-treatment iodoform is especially valued, as it seems to have the power of checking any subsequent tubercular formation which might start from small portions of granulation tissue overlooked in the dissection. A seton of iodoform gauze is passed through the joint from side to side, and is kept in position until the wound is healed up; when it is finally withdrawn the sinus usually closes promptly. A posterior wire splint was used in all his cases. He employed the method by two lateral incisions.

Inguinal Properitoneal Hernia.

Dr. William Stone Torrey reports (*Annals of Surgery*, March, 1888) the following interesting case: The patient, aged thirty years, and who had had a hernia for a long time, had nine days previously suddenly become unable to return it to the abdomen. Since that time he had had all the symptoms of acute intestinal obstruction. Physical examination revealed on the right side a small irreducible scrotal hernia, and in the abdominal wall on the same side a swelling as large as the hand just above Poupart's ligament, and midway between the crest of the ilium and the linea alba, tense and elastic on palpation, and resonant on percussion. The patient was etherized and herniotomy performed, revealing a congenital inguinal hernia. The intestine could readily be reduced, but with the invariable effect of increasing the size of the swelling in the abdominal wall. The incision was, therefore, extended

upward from the seat of this swelling, laying open the pouch situated between the transversalis fascia and the overlying muscles, which was found to contain a section of intestine from twelve to eighteen inches in length. The parietal peritoneum forming the sac was much thinned and firmly adherent to the walls of the cavity, and there were numerous adhesions between the gut and the sac itself. Reduction was difficult on account of the narrowing of the internal abdominal ring by the products of recent inflammatory action, and was finally effected by the division of the ring with the hernia knife.

The sac was then brought together by a continuous catgut suture, and the remaining parts closely approximated. The patient died of heart failure ninety hours after the operation. Dr. Torrey believes the condition to have been that of an incarcerated obstructed properitoneal hernia, for the following reasons: 1st. The existence of an abdominal tumor for a comparatively long time prior to the occurrence of symptoms indicating intestinal obstruction. 2d. The presence of organized adhesions between the coils of intestine and the inside of the properitoneal sac demonstrated that they were not of recent formation. 3d. The absence of constriction at any point other than that of the internal abdominal ring with the evidence of recent inflammatory action in that situation. 4th. The favorable mechanical conditions afforded for the production of a properitoneal hernia by the action of a truss on the person of the patient whose occupation—that of horseshoeing—was favorable to the development of such a hernia. 5th. The frequent employment of violent taxis.

The Endoscope in the Diagnosis of Vesical Diseases.

Sir Henry Thompson recently demonstrated (*Brit. Med. Journ.*, April, 1888) at University College Hospital the use of Leiter's endoscope in vesical troubles, and described the details of its employment. He thinks it will be most useful in the cases of those small bleeding tumors, the presence of which and the extent of whose development are often difficult to demonstrate satisfactorily. Such tumors usually produce repeated attacks of hæmaturia during a considerable period of time, and are, often for a long time, unaccompanied by pain or by frequency of passing water. They cannot be recognized by sounding as for stone, because the sound is not capable of appreciating so small and soft a mass. The appearance of a tiny shred of growth in the urine is, of course, diagnostic, but even then it cannot be accurately ascertained whether the growth is large or small, or whether we have one or several to deal with. Under these circumstances the endoscope may possibly be useful. So far as cancerous vesical growths are concerned—those tumors which can be felt through the rectum—little or no indication exists for the use of an endoscope. In cases of impacted calculus or of foreign body in the bladder the instrument may be very valuable. As applied to the urethra it is possible that in cases of localized congestion or of little papillomatous growths requiring the application of some caustic, the instrument may also be of use. In cases of stricture it is not likely there will be the least advantage in employing it. In conclusion, the lecturer stated that the use of the endoscope taxes the bladder and urethra more severely than the ordinary operation of sounding, and therefore should not be adopted without adequate necessity. It should not be regarded as an instrument in any case for diag-

nosis except when other ordinary resources have failed; and the simple means, hitherto relied on, of prosecuting diagnostic research in vesical troubles must be retained.

Mr. E. Hurry Fenwick reported several cases of the use of the Nitze cystoscope, in which vesical growths, vesical calculi, and foreign bodies were discovered by its aid, and believes it will be of great use in bladder troubles when other forms of investigation have failed. He has but little doubt of its future importance in the differential diagnosis of the site of symptomless hæmaturia and pyuria, as the ureters can generally be discovered and examined as to the character of their efflux. He has seen in one case of renal hæmaturia a jet of bloody urine issue from the right ureteral orifice into the artificially clear contents in the bladder, just as a cuttle-fish would squirt out its fluid into the water around. The source of the hemorrhage was thus at once recognized. He thinks it will be of use in the estimation of the advisability of suprapubic removal of prostatic intravesical outgrowths (MacGills' operation). It may indicate the difference between growths which are removable, and those which it is the wisest policy to leave undisturbed. Lastly, it will be a means of deciding between the *boutonnière* and the suprabubic operation for vesical growths; those which are single, lightly pedicled, and situated close to the urethral orifice may well be treated by the perineal incision; whilst those which are shown to be multiple, subsessile, or springing from dimples in the mucous membrane necessitate the wider access afforded by the *sectio alta*.

DERMATOLOGY.

UNDER THE CHARGE OF

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On a Form of so-called Seborrhœa.

In the March (1888) number of the *Manchester Medical Chronicle*, Brooke discusses the relationship existing between so-called seborrhœa corporis and the diseases variously described as seborrhœa capitis, lichen circumscriptus (Willan and Bateman), lichen annulatus seu circinatus seu serpiginosus (Erasmus Wilson), pityriasis rosea (Gibert), pityriasis maculata et circinata (Horand), lichen marginatus (Jamieson), and concludes that they are in reality the same disease. This same opinion, at least as regards the identity of one or more of these affections, has, as the writer states, been advanced by several of the above-named authors. These conditions have also been lately described by Unna under the name of eczema seborrhoicum. This name Brooke considers inappropriate, as it implies from association a pathological

connection with the sebaceous glands, whereas, as later investigations, especially those of Unna, indicate that the so-called seborrhœas are entirely independent of these structures; and, moreover, that the process is in nowise eczematous, although eczema may often be superadded as a complication. He suggests the adoption of the name of stearrhœa or steatorrhœa, each of the several varieties to be individualized by the use of a qualifying term. The cause of these various forms of "seborrhœa," the author thinks —in this and in many other respects following the teachings of Unna—is, in all probability, of a parasitic nature.

The paper concludes with the following: "As a prophylaxis against future outbreaks, Unna insists on the necessity of a prolonged and vigorous attention to the scalp. In almost every case in which seborrhœa occurs on the body, the scalp will be found to be affected with the disease. What the cause may be which excites it to spread after a quiescent stage, it may be of years, is still unknown; but the frequency with which fresh outbreaks spread from the scalp, shows that the existence there of the disease even in a slight form, is a constant source of danger. The head should, therefore, be frequently and thoroughly washed with soap and water, and one of the above ointments (weak mercurial, sulphur, and resorcin ointments referred to) persistently applied."

Pemphigus Acutus seu Febrilis.

Under the above title C. W. Allen contributes the notes (*Journal of Cutaneous and Genito-Urinary Diseases*, April, 1888) of a case of an acute bullous eruption. After a few days of itching, general malaise, and chill, blebs made their appearance, becoming more or less purulent, and a few hemorrhagic. New bullæ continued to appear from day to day for almost two weeks, at the end of which time recovery began to take place. The lesions varied in size from a pea to a hen's egg, and arose from apparently normal skin. There was slight fever, with more or less marked evening exacerbation. The whole process from beginning to end lasted about one month. The eruption was somewhat general, not extending, however, below the knees and elbows. The skin between the lesions was normal. At the time of the report, two months after the eruption had disappeared, there was no evidence of a recurrence.

Pemphigus Universalis.

A case of an acute and subsequently recurrent pemphigoid eruption is reported (*Edinburgh Medical Journal*, January, 1888) by A. C. Miller. After a few days' malaise terminating in a chill, intensely itchy and stinging vesicular patches of erythema appeared, upon which bullæ soon developed. The eruption involved the entire surface excepting head, hands, and soles. Many bullæ were crescentic and gyrate in shape. The constitutional disturbance, which was at first well marked, abated, and the eruption began rapidly to subside, but crops of small blebs continued to break out upon the trunk and arms. At the end of a few weeks there was a recurrence, and so the disease behaved for some time. The case was further complicated by boil formation. In places small herpetic-looking vesicles were observed to

develop in groups. The author noted "the close relation that existed between three varieties of eruption, viz., erythema, pemphigus, and herpes." The patient improved under arsenic, and, according to the last report, was well excepting the appearance, now and then, of small blebs. The intense itching, which was throughout the chief annoyance, was best controlled by the application of a lotion of subacetate of lead. [The case corresponds in its manifestations to dermatitis herpetiformis.—EDS.]

THE SO-CALLED VERRUCA NECROGENICA AND ITS RELATION TO LUPUS AND TUBERCULOSIS.

FINGER (*Deutsche medicinische Wochenschrift*, February 2, 1888) shows from his own observations, supported by those of Verneuil, Verchère, Holst, Merklen, Raymond, and others, that the diseases hitherto known as tuberculosis of the skin, lupus, and verruca necrogenica, are essentially identical and due to the same primary cause. He thus confirms the views already expressed (1883) by Vidal and Besnier in regard to the tubercular nature of this last-named lesion. This same lesion may also follow inoculations with sputa, etc. The histological examination usually discloses the presence of the characteristic bacilli. It is, however, more superficial than ordinary lupus, having its seat exclusively in the cutis, while in the latter disease the subcutaneous tissues are also involved. This fact explains the relative curability of these two affections. The writer suggests that children are much more frequently exposed to accidental inoculations of decaying matter, etc., and that the skin being thin and more tender, is much more readily invaded in all parts, and as a consequence the ordinary type of lupus results, whereas, in adults, inoculations result in the superficial form of the disease, so-called verruca necrogenica.

THE MECHANICO-SURGICAL TREATMENT OF SKIN DISEASES.

The various plans of mechanical treatment of lupus and kindred diseases are briefly given (*Journal of Cutaneous and Genito-Urinary Diseases*, April, 1888) by MORROW, the methods of Besnier and Vidal receiving special commendation. That of the former, as is well known, is by means of punctate and linear galvano-cauterizations; while that of the latter consist in linear and punctate scarifications. These two methods, the author considers, both from personal observations of the results obtained by these distinguished dermatologists, and from his own experience during the past six months, the most important advance in the treatment of lupus for many years. The latter —linear and punctate scarifications—leaves a more superficial cicatrix, and there is less tendency to the formation of keloidal growths, and hence should usually be preferred when the disease is upon the exposed parts. A combination of the two methods is, however, often found desirable.

THE ETIOLOGY AND SYMPTOMATOLOGY OF ALOPECIA AREATA.

In a comprehensive paper (*Berliner klinische Wochenschrift*, No. 6, 1888) MAX JOSEPH gives a *résumé* of the present status of the trophoneurotic theory of the origin of alopecia areata. He directs attention to the fact that the

affection is seen usually between the ages of five and thirty, and in most instances appears during the periods of second dentition and puberty—in short, when active nervous energy is demanded elsewhere. Reference is made to his experiments with cats, showing circumscribed falling of the hair after excision of certain nerves, and which have been repeated recently by Mibelli with the same results. Several cases are briefly related in which the bald patches appeared shortly after profound nervous shock. The symmetrical distribution of the areas, as frequently observed, is also mentioned as bearing upon the neurotic origin of the disease. While the writer insists upon the importance of the trophoneurotic theory, he admits that as yet all cases of the disease cannot be said, with certainty, to be due to this cause.

Xeroderma Pigmentosum and its Relation to Malignant New Growths of the Skin.

In an exhaustive paper on this rare disease (*Medical Record*, March 10, 1888) Taylor gives the full histories of the seven cases observed by him, and in a comprehensive tabulation includes thirty-three others, making a total of forty cases. This comprises almost all the cases accurately recorded. It would seem that the disease has, with one or two exceptions, its beginning in earliest childhood. Several members of the same family are usually attacked. Its manifestations consist chiefly in telangiectases, pigmentation, and atrophy, all of which have the closest pathological relations. To these lesions are superadded new growths, at first benign in character, but in most instances sooner or later becoming malignant. The disease is progressive, but variable; in rare instances after some years remaining stationary. The first lesions, according to the writer, are the red spots, and these subsequently become the seat of pigmentation. Atrophy soon occurs, and coincidently or after months or years, epithelial new growths make their appearance. In their most simple form these resemble the plaques often seen in the aged (keratosis senilis). Often, however, these are the starting-points of larger, sessile or pedunculated new growths, and usually of a malignant character. In the seventeen cases in which malignant new growths appeared, the following varieties were noted: epithelioma, fourteen times; melano-sarcoma, once; sarco-carcinoma, once; and "cancer" once. In the six instances of benign growths: papillary warts, two cases; papilloma, two cases; granuloma and pannus, each one case.

Double Comedo.

Ohmann-Dumesnil reviews at some length (*St. Louis Medical and Surgical Journal*, January, February, and March, 1888) his observations regarding double comedo, a condition to which he directed attention a year or more ago. It occurs somewhat frequently, an examination of a large number of males showing its presence in the proportion of three and a half per cent. Occasionally, also, may be noted cases in which three or four comedones communicate with one another—multiple comedones. The comedones are necessarily close together in the form of an irregular group, and are connected by slightly curved, horizontal canals, easily demonstrable by passing a slender wire from one to the other. This anomaly, in the author's experience, is found most

frequently over and below the malar prominences and on the upper part of the shoulders posteriorly. The condition—the intercommunicability of the several comedones—is apparently an acquired one, as the writer failed to find any evidence of such in infants or children, or in adults not affected with comedo. The most plausible explanation seems to be that in the deepest portions of the closely contiguous comedones, from pressure and consequent absorption of the intervening tissue, fusion takes place, resulting in one cavity with two or more external openings.

Tuberculosis of the Skin.

Vallas (*Annales de Derm. et de Syph.*, tome viii. No. 12) regards the lesions of tuberculosis of the skin as variable, according to the virulence of the tubercle bacillus and the resistance of the tissues. Three forms are described; first, the "granular caseous;" second, the "follicular;" third, the nodular tuberculosis of Friedländer, with reticulated tissue, the latter resembling lupus vulgaris. Tuberculosis of the skin is a rare lesion, according to the author but 33 observation being on record. Of these, 13 were seated about the anal region; 11 upon the lips; 5 on the upper extremities; 2 on the face; 2 on the vulva; 1 on the penis; and 1 on the lower extremity. The disease is to be diagnosticated from the lupous ulcer, chancre, chancroid, tertiary and syphilitic ulceration, and epithelioma. According to the author, the local treatment gives unsatisfactory results, the improvement of the general health being of most importance.

OBSTETRICS.

UNDER THE CHARGE OF

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The Treatment of Placenta Prævia.

Obermann, in the *Archiv für Gynäkologie*, Band 32, Heft 1, publishes his results in the treatment of placenta prævia by Hofmeier's, or the Berlin method. Obermann's material for observation was sixty-four cases occurring in the Leipzig clinic during four years; of these the maternal mortality was 11 per cent., among the children 53 per cent. After a full consideration of his cases, he describes the method of treatment employed, briefly, as follows:

1. Hemorrhage in patients with placenta prævia calls for early operation; the best operation is version by combined external and internal manipulation, with deliberate extraction.

2. The operator should bring the breech to the os uteri and maintain it as

a tampon; massage of the body of the uterus during deliberate extraction is an important adjunct to the operation.

3. Hemorrhage from a lacerated cervix should be checked by immediate suture; tamponing with iodoform gauze is only advisable when hemorrhage occurs during early pregnancy; when the os is undilated the colpeurynter should be used.

4. Alcohol (brandy or sherry) should be early and freely given.

NORDMANN (*Ibid.*) regards the mortality among children in cases treated by early version and deliberate extraction as unreasonably great. He, therefore, in treating forty-five cases in Leopold's clinic, at Dresden, endeavored to adapt his treatment to the individual case, retaining many of the expectant modes of treatment commonly practised. His results were a maternal mortality of 13.3 per cent., and a mortality among children of 43.7 per cent. He concludes that an early, routine, operative treatment should not be employed, but thinks more expectant methods already in vogue should not be entirely abandoned.

[Both articles contain analyses of cases bearing upon the etiology and treatment of placenta prævia, worthy of study in the original.—ED.]

THE EFFECT OF ERGOT UPON INVOLUTION OF THE UTERUS.

BLANC, of Paris, in the *Annales de Gynécologie* for March, 1888, reports the results of a series of cases treated uniformly with ergot after delivery, as follows: Ergotin, when given during the first five or ten days after delivery, does not exercise a favorable effect upon involution. On the contrary, its action is to oppose the regular retraction of the uterus. With the exception of secondary, or post-partum, hemorrhage ergot is contra-indicated after delivery.

At a meeting of the London Obstetrical Society (*British Medical Journal* and *Lancet*) on February 1, 1888, HERMAN and FOWLER reported observations upon two selected groups of patients, which showed that ergot produced a diminution in the size of the uterus, but had no influence upon the lochia, in quantity or time of continuing. BOXALL reported observations upon two hundred patients which showed that ergot diminished the size of the uterus, the formation of clots, and severity of after-pains. DAKIN thought that the continuous use of ergot, by maintaining tonic contraction, tended to favor retention of clots and prevented normal involution.

THE ETIOLOGY OF PUERPERAL FEVER.

EISENBERG, in *Centralblatt für Bakteriologie*, Nos. 11 and 12, 1888, reviews the bacteriological literature of the subject, and sums up the present state of our knowledge as follows:

Puerperal fever is not a specific disease; but is that process recognized in surgical practice as phlegmon, pyæmia, or septicæmia, and caused by both streptococcus and staphylococcus, and in some cases appearing as a diphtheritic process. It follows naturally that all the means which the study of bacteria has shown to be efficient should be employed to destroy sources of infection.

Alcoholism in Obstetrics.

Matthews Duncan, in the *Edinburgh Medical Journal* for April, 1888, considers the free use of alcoholic drinks as a cause of sterility and abortion in the mother, and as producing idiocy, epilepsy, and defective development of the nervous system in the children of those drinking freely. In spite, however, of much evidence of the same tenor as Duncan's views, he does not find ground for accepting Darwin's statement that diseases following alcoholic indulgence are cumulative to the third generation, when they result in the extinction of the family. The evidence brought forward must be more thoroughly analyzed before so sweeping a conclusion regarding hereditary alcoholism can be accepted.

The Treatment of the After-birth in Normal Labors.

Credé, of Leipzig, in the *Archiv für Gynäkologie*, Band 32, Heft 1, writes in answer to a discussion upon his method of treating the third stage of labor, which occurred at the Wiesbaden Congress of last year, and in which varied criticisms and modifications were suggested.

He reminds his readers that when he first advocated the method which commonly bears his name there were but two procedures in vogue, that which consisted of removing the placenta with the hand, or an instrument introduced from without, and the expectant plan, which relied upon Nature entirely. He comments upon the misstatements of his method which have been made, and considers the term "external method" as its most appropriate designation.

The most decided criticism made against Credé's exposition of his method is that he does not define clearly enough the time at which the placenta is to be delivered. He considers that the choice of the time for employing his treatment depends upon one of the three indications for terminating labor, which are as follows; terminating a dangerous condition already established; the prevention of accident; saving of time. Regarding the first there can be no question, the patient must be rescued from her peril at once by bringing labor to a close. Regarding the second, Credé's experience has led him to believe that in the majority of normal labors, when the uterus contracts well, and responds to massage promptly, that three or four after-pains suffice to expel the placenta in from fifteen to thirty minutes after the birth of the child. He does not, however, advise that labor be ended invariably in this time; he recognizes the fact that many circumstancee may render the exercise of a more expectant course of action necessary. The saving of time and suffering he thinks well worthy of serious consideration, from the interests of attendants and patient alike, especially since the method of treatment advised exposes the patient to no added danger.

He replies to the objection that greater loss of blood results from his treatment by stating that the loss of blood in a labor depends upon so many factors that it would be difficult to assert that any one is solely the cause; he is positive that the loss is not increased, but in his experience diminished by his delivery of the placenta.

He also thinks that the retention of chorion and decidua is not more

frequent among patients so treated; it occurs with about equal frequency with various methods of treating the third stage of labor. In four and one-fourth years he has treated 4969 patients in the Leipzig clinic without a case of retention, death, or serious complications which could be ascribed to this treatment. The cause of puerperal accidents he believes to be the meddlesome practice of the accoucheur; for fragments of placenta and membranes, when left to Nature and without infection conveyed by instruments, Credé believes to be innocuous. Auto-infection in such a case he considers impossible; the infecting material must come from without, and be absorbed by a recent wound, or an old wound recently freshened.

To the criticism that uterine massage, or "rubbing of the uterus," is unnecessary and dangerous, Credé replies that he does not advocate violence, but gentle, patient massage and stroking of the uterus, which when done by a practised hand cannot do harm. This method is not difficult to acquire, but is not a trivial procedure, or one to be performed without care and skill. A student should learn first to stroke gently the entire anterior surface of the uterus, then to straighten the uterus, and place it so that its direction (or axis) corresponds with that of the sacrum and coccyx, and, finally, he should add pressure exerted upon the uterus. The last is intermitted during uterine contractions. It is usual in patients so treated to find the placenta lying in the vagina after a short time.

A substitute proposed for this treatment is pressure by the abdominal muscles, which evidently is poor reliance in a condition where the tissues have been distended and weakened, and where the mother's strength is nearly spent by her labor. To the proposals to rub or massage the inferior segment only of the uterus, and also to push it upward above the supposed site of the placenta, Credé replies that the most efficient muscle of the uterus is in the superior and not in the inferior segment, and hence the part most powerful to contract should be stimulated: if the uterus be strongly pushed up immediately after delivery, a laceration of the cervix may be made larger; it is unnecessary strongly to raise the uterus, for stimulation of any portion of the uterine muscle will result in the contraction of the whole. He does not believe that the placenta is separated by the formation of a blood-clot between the placenta and the uterine wall, but believes that the uterus expels the placenta by its contractions, as it does the child.

Credé feels justified in concluding that the method which he originated is correct in principle, and in practice is without objection. He has no reason as yet to alter his method; the improvements suggested by others are already possessed by his treatment, or they are unimportant. He believes that no occasion has been shown for adopting any of the modifications proposed. [The value of Credé's mode of treatment is sufficient reason for abstracting his article to considerable length.—ED.]

HYPNOTISM IN OBSTETRICS.

AUVARD and SECHEYRON, in the *Archives de Tocologie*, Nos. 1, 2, and 3, 1888, have tabulated and analyzed thirteen cases in which a parturient was hypnotized; they add three cases, one in which mock chloroform was given, and the patient was deluded into a species of hypnotism; an unsuccessful

attempt to hypnotize a patient; and a case where bromide of ethyl was given.

The conclusions at which they arrive regarding the value of hypnotism as a practical expedient in obstetrics are as follows: Hypnotism may be produced during labor, but with more than usual difficulty; when produced it exhibits the three forms described by Charcot, catalepsy, lethargy, and somnambulism, the cataleptic condition having been least well developed.

The advantage of the hypnotic state during labor is its effect as an anæsthetic; the suppression of pain may be obtained by simple lethargy, or by somnambulism with or without suggestion.

Insensibility is by no means the constant result of hypnotism produced during labor; in direct contrast to those cases in which insensibility was produced are cases in which the patient was not made insensible, or but partial insensibility was the result. During uterine contractions the ordinary methods of producing hypnotism fail, especially during the period of the expulsion of the fœtus. Some women, when partially through their labors, may become sufficiently lethargized to render them forgetful of what happened in the first stage of labor; from this the complete success of hypnotism is not to be inferred. The hypnotic state does not favor the progress of labor, but rather results in a diminution of the vigor of the uterine contractions.

Hypnotism, as an anæsthetic, is uncertain and inefficient, and possesses grave objections from a medico-legal standpoint; as we possess much more efficient agents in chloroform and chloral, the employment of hypnotism in obstetrics should be only exceptional. Among easily impressionable women hypnotism may be induced during the dilatation of the cervix, but during the period of expulsion chloroform, as ordinarily used, is much better. Aside from true hypnotism, suggestion, the employment of pseudo-chloroform (a mere trace), and other similar expedients may be used in controlling impressionable women.

The Power of Resistance of the Parturient Uterus to Germs.

At a recent meeting of the French Academy of Sciences, Straus and Sanchez-Toledo reported experiments which they had made to determine the susceptibility of the uterus, shortly after parturition, to various germs.

They first, at intervals varying from three hours to three days after delivery, removed with sterilized platinum wire from the uteri of animals small portions of the uterine contents, with which they made cultures in various media. These cultures remained uniformly sterile, showing that normally the uterus contains no pathogenic bacteria after delivery.

They then curetted the uterine cavity of animals killed immediately after delivery; the matter thus obtained yielded no microbes when stained and microscopically examined. Sections of the uterus, made soon after parturition, revealed no microörganisms. They conclude, therefore, that the uterus after normal birth contains no pathogenic microörganisms.

It was then determined to test the normal, recently emptied uterus, regarding its susceptibility to pathogenic microbes. Accordingly, cultures of the bacillus of anthrax, the bacillus of septicæmia, the staphylococcus aureus, and the microbe of chicken cholera, were injected into the cavity of the uteri

of living animals; control experiments being made by injecting the same bacilli hypodermatically into other animals. Intrauterine injection of microbes in healthy, recently delivered animals was without result, with the exception of the bacillus of chicken cholera, which proved rapidly fatal to the small animals experimented upon.

The experimenters conclude that ordinarily the parturient uterus contains no pathogenic microbes, nor is it susceptible to the presence, in its cavity, of most of the infectious germs. The idiosyncrasy exhibited to the microbe of chicken cholera is inexplicable; but shows that each species of animal possesses especial susceptibility to a particular germ or species.—*L'Union Médicale*, April 21, 1888.

[The contrast between the fatal effects of the hypodermatic injection of microbes and their presence in the uterine cavity, illustrates the readiness with which the organism is affected when the circulation is directly entered, and the power of resistance to infection possessed by the glandular tissues. For similar investigations upon the germs present in the human subject, the reader is referred to studies by Döderlein, of Leipzig (AMERICAN JOURNAL OF MEDICAL SCIENCES, March, 1888, p. 315).—ED.]

THE RELATIONSHIP BETWEEN ALBUMINURIA AND DISEASES OF THE PLACENTA.

WIEDOW, in the *Zeitschrift für Geburtshülfe*, Band xiv. Heft 2, reviews the literature of the subject, and adds five cases which he had observed.

He concludes from minute study of the placenta that the lesion present is a coagulation-necrosis of the epithelia of the villi or interstitial placentitis. Regarding the question, as to which is cause and which effect, Wiedow has no satisfactory answer. In the majority of cases, only the changes in the kidneys ordinarily occurring during pregnancy are found, and, on the other hand, normal placentæ are often present in the case of women who suffer from nephritis. In twin pregnancies, when albuminuria exists, one placenta may be healthy, and the other diseased. Syphilis often produces placental lesions, but all signs of this disease were wanting in the cases reported.

Wiedow is led to conclude that the relationship between albuminuria and disease of the placenta is one of coincidence, and not of cause and effect.

THE TREATMENT OF OCCIPITO-POSTERIOR POSITIONS.

The *Boston Medical and Surgical Journal* of April 19, 1888, gives a discussion on this subject, at the Massachusetts Medical Society, opened by GREEN, of Boston, whose views are briefly, as follows: When the head, in occipito-posterior position, rests above or at the superior strait attempt anterior rotation by postural treatment and manipulation through the abdominal wall; and failing in that, perform version.

When the head has entered the pelvis, in occipito-posterior position, and flexion is gradually lost and rotation fails, an effort should be made to produce flexion by the hand in the uterus or vagina. If this is unsuccessful straight forceps are the best instrument with which to produce rotation; if they cannot be procured the reversed application of the curved forceps, as

proposed by Richardson, of Boston, may be practised, but with the greatest caution. Delivery in occipito-posterior position, without rotation, should be avoided if possible because of danger to the perineum.

REYNOLDS emphasized the importance of early diagnosis by external examination, and also the measuring of the pelvis to determine the presence of contraction. When a large head had entered the pelvis in occipito-posterior position Reynolds thought instrumental interference should be practised with the greatest possible caution.

DOE urged the possibility of rotating the head, early in labor, by putting the patient in the knee-chest position, and manipulating the head *per vaginam*.

REYNOLDS (J. P.) stated that he thought the use of the vectis was commonly misunderstood and misstated; the vectis was intended to be used from the front of the pelvis upon the parietal bone or mastoid process, pressure being made from above downward, while the other hand of the operator protects the mother's soft parts from the handle.

In closing, GREEN urged the importance of early diagnosis, and of etherization whenever needed. When the occiput cannot be rotated he thought it best to favor complete extension, and allow birth to occur by face presentation. Regarding the patient's posture in applying forceps, he has placed his patients upon the back.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,

OF NEW YORK.

ATTACHMENT OF THE RETROFLEXED UTERUS TO THE ANTERIOR ABDOMINAL WALL.

LEOPOLD, in a paper read before the Gynecological Society of Dresden (*Centralblatt für Gynäkologie*, March 17, 1888), considers the results of hysterorrhaphy in three cases after the lapse of a year. The operation was performed in each instance for the relief of a condition that had existed for years, resisting every method of treatment. Pain was entirely and permanently relieved, and the uterus remained anteverted, though movable. The following are brief histories of the cases:

CASE I.—The patient had suffered for five years with persistent pains over the sacrum and lower part of the abdomen, caused by retroflexion and perimetritis. She could not wear a pessary (although the uterus was movable) on account of a tendency to frequent attacks of pelvic inflammation. The abdomen was opened, the uterus drawn upward and secured by three silk sutures, the first being introduced through the entire thickness of the abdominal wall to the left of the wound, then through the bases of each round ligament in succession, and finally through the right edge of the wound; the second suture passed through the serous covering, including some

of the muscle of the uterus, a little in front of the origin of the tubes, while the third was similar to it, but was introduced through the fundus behind the tubes. In order to secure a firm union between the fundus and the parietal peritoneum, the serous covering of the former was dissected off between the points of entrance and exit of the stitches. The appendages were not removed. The patient's convalescence was uninterrupted, and at the end of fifteen months the uterus remained firmly attached to the anterior abdominal wall, but freely movable; there was no vesical irritation, menstruation was normal, and all the former troubles had disappeared.

CASE II.—The uterus was large, retroflexed, and attached by firm bands to the rectum; the right ovary was enlarged and prolapsed, the left tube and ovary being bound down. The latter were removed, the right tube and ovary being spared. The uterus was freed, drawn upward and sutured as before; no drainage tube was used. Eleven months later the uterus remained in position, and the patient was able to perform her usual duties. The sacral pain, of which she complained before the operation, still persisted, although it was not so severe as formerly.

CASE III.—The patient had long suffered from menorrhagia associated with severe pains in the back and abdomen. The uterus was enlarged and retroflexed, but not adherent; both ovaries and tubes were enlarged, fixed, and sensitive. Defecation was painful. No benefit having been afforded by the usual palliative treatment, laparotomy was performed, when it was found that the intestine was adherent to the entire posterior surface of the uterus, while the appendages were thoroughly diseased. The latter having been removed, the fundus uteri was attached to the abdominal wall by a single suture and a drainage-tube was left in Douglas's pouch. No bad symptoms followed, the patient being discharged on the seventeenth day. Six months later the uterus was small, in a position of antero-lateral flexion, but freely movable; there were no evidences of parametritis. Menstruation had ceased and all painful symptoms had disappeared. Ten months after the operation the patient was in excellent condition, and the uterus remained as before.

Commenting on these cases, the writer insists on the necessity of waiting until the expiration of at least a year before assuming that the operation has been entirely successful. As regards the method of suturing the uterus in order to secure mobility of the organ, he points out that after Cæsarean section the abdominal and uterine wounds usually remain permanently adherent without giving rise to subsequent disturbances. He leaves the sutures until the twelfth or fourteenth day. Vesical irritation was not noted in any instance, nor was it necessary to support the uterus by means of a pessary.

THE RADICAL CURE OF RETROFLEXION BY A NEW METHOD.

SCHÜCKING (*Centralblatt für Gynäkologie*, March 24, 1888) calls attention to the important fact that, in attaching the non-pregnant uterus to the anterior abdominal wall after performing laparotomy, the anatomical relations of the organ become somewhat unnatural, while every method of fixing the uterus by a suture passed through the vaginal vault is open to the dangers of puncturing a coil of intestine, and tearing out of the superficial suture with resulting internal hemorrhage. He accordingly suggests the feasibility of

passing a suture from the interior of the uterus outward and downward through the anterior fornix, with the object of causing an adhesion between the anterior surface of the organ and the vesico-uterine pouch of peritoneum, thus producing permanent anteflexion.

The writer operated in two cases according to the following method: The retroverted but movable uterus was anteverted on a sound, the patient being in the lithotomy posture. A specially constructed guarded aneurism-needle (similar in principle to Bellocq's canula), threaded at its point with a stout silk ligature, was introduced into the uterine cavity on the left index-finger, while with the right finger the anterior vaginal fornix was pushed forcibly upward and backward, so as to bring it in apposition with the fundus uteri. The bladder (previously emptied) was thus pressed forward out of the way, and the safety of any coil of intestine which might have occupied the vesico-uterine pouch, was assured. The needle was then protruded from its canula, and as soon as it had penetrated the anterior uterine wall, as determined by the diminished resistance, the canula was pushed forward over the point, and the handle of the instrument was carried backward until its point was felt by the finger in the anterior fornix, when the needle was again pushed forward through the vesico-uterine fold and fornix, and the loop of silk was seized with a tenaculum and one end was drawn through into the vagina. The instrument was then withdrawn, leaving the other end of the silk protruding from the os; these were tied tightly, an iodoform tampon was introduced, and special precautions were taken to guard against peritonitis. The suture was removed on the sixth day, support being furnished by vaginal tampons until the ninth day, when these too were discontinued.

Two weeks after the operation in the first case the uterus was found to be retro-displaced as before, probably because the suture was removed too soon. In the second case reported the patient was allowed to walk about after ten days, the suture not being removed until the end of the second week. The uterus was found to be sharply anteflexed, and had not changed its position since the operation; the symptoms due to the displacement had entirely vanished.

The writer concludes that the recurrence of the displacement in consequence of the new formation of retro-uterine adhesions is less likely to occur when the uterus is fixed in a position of exaggerated anteflexion, as by his method.

Palpation of the Uterus and Ovaries after Dilatation of the Rectum.

Ullmann (*Ibid.*) demonstrated before the Vienna Obstetrical Society the value of dilatation of the rectum by means of a colpeurynter, preparatory to bimanual examination. When the latter is filled with water the uterus and its appendages are elevated and approximated to the anterior abdominal wall.

Experiments on the cadaver showed that when the bladder was emptied, and the colpeurynter was distended with six or eight ounces of water, the uterus ascended in an arc extending upward and forward; the left ovary at the same time was raised higher than the right, and the uterus was situated

obliquely in such a way that the end of the right tube was somewhat higher than that of the left. When the bladder was filled the uterus was turned on its long axis so that its left border approached nearer to the abdominal wall than the right, the left ovary being carried upward and forward.

In the living subject with the rectum similarly distended, the uterus is strongly anteflexed and approximated to the abdominal wall, so that the entire organ with its appendages and the broad ligaments can be accurately mapped out by bimanual examination. When the bladder is full, the right ovary is elevated so that it becomes inaccessible to the examining finger.

Intestinal Obstruction after Ovariotomy.

Nieberding (*Ibid.*) reports the following case: a woman, æt. twenty-nine, was operated upon for cysto-sarcoma of the ovary; the tumor was somewhat adherent, but was removed without special difficulty. Before closing the abdominal wound it was noted that the omentum was so short that it could not be spread over the intestines. On the third day urgent symptoms of intestinal obstruction developed, and the wound was reopened. A coil of intestine was found to be adherent to the left border of the line of the incision, so that the lumen was obstructed at this point; the gut was detached, but general peritonitis had already developed and the patient succumbed soon after.

Commenting on this case, the writer thinks that the avoidance of a similar accident may be assured by discarding too strong solutions of bichloride of mercury, which cause irritation of the peritoneum. In this case there was no clinical or pathological evidence of septic peritonitis. Since there is great danger in leaving the intestines uncovered by omentum, if the latter is too short for this purpose, the peritoneal wound should be closed separately so that there may remain no raw edge to which a loop of intestine might adhere. As soon as there is a strong suspicion that such an adhesion exists a secondary operation ought to be performed without delay.

The Cure of Prolapsus Uteri by Exercise of the Pelvic Muscles and Methodical Elevation of the Uterus.

Preuschen (*Centralblatt für Gynäkologie*, March 31, 1888) has made a careful study of the method of pelvic massage practised by Brandt, of Stockholm. The movements are of three kinds—elevation of the uterus, opposed movements of the hip-joint, and percussion of the lumbar and sacral regions. The patient is placed on a couch in the lithotomy position; the operator stands at her left side, facing her, and presses the palms of his hands deeply between the symphysis and the fundus uteri, while at the same time an assistant keeps the uterus anteflexed by his finger introduced into the vagina. The operator grasps the uterus and draws it upward, then allows it to sink back into its place; at the same time the finger of the assistant follows the organ upward, and by pressing upon the anterior fornix, prevents it from becoming retroverted. This manœuvre is repeated thrice at each *séance*.

The patient being in the same position, adducts the thigh, bringing the knees and heels in close contact; the operator, sitting beside her, abducts the

limb, while the patient opposes him as strongly as possible. When abduction is complete, he seeks to adduct, the patient opposing as before. The percussion movements consist in light taps given with the edge of the open palm.

The successful case reported by the writer was that of a woman with complete procidentia of thirty-one years' standing. Pessaries had been tried in vain, and the patient would not consent to an operation. From the first day on which the above described method of treatment was adopted the uterus remained within the vagina, although the woman in coming to the clinic was obliged to walk a long distance, and ascend two flights of stairs. After three and a half months the uterus remained in its normal position, and the cure was apparently permanent.

The writer's observations led him to the following conclusions: The opposed movements of the hip are the most important factors in promoting a cure. Elevation of the uterus tends simply to correct the retro-displacement which is always present in cases of prolapsus, and not to fix the organ in its normal plane in the pelvis. During opposed adduction there is an undoubted contraction of the muscles forming the pelvic diaphragm. This may be readily demonstrated in the case of the levator ani, especially when the patient's hips are elevated. When this muscle contracts strongly, not only is the vaginal opening in the diaphragm narrowed from behind forward, but the distance between the portio vaginalis and this opening is increased. Through the action of the levator ani the vagina is separated into an upper horizontal and a lower oblique portion; the former sustains the cervix, so that the more horizontal and elongated it becomes, the firmer is the support furnished to the cervix. In other words, the contraction of the levator not only narrows the vagina, but prevents the uterus from sinking downward. If the uterus becomes retroverted, the abdominal pressure will tend to force the cervix forward until it reaches the oblique descending portion of the vagina, when any considerable increase of the *vis a tergo* will cause the uterus to become procident. When, on the other hand, the organ is anteverted, the abdominal pressure will simply crowd the cervix downward more firmly upon the barrier formed by the contracted levator; hence the importance of keeping the uterus anteverted while practising the opposed movements. The latter tend directly to restore the tone of the relaxed levator in cases of long-standing procidentia.

The Diagnosis and Treatment of Peritoneal Adhesions of the Displaced Uterus.

Ter-Grigoriantz (*Ibid.*) recommends the following method as being more convenient than Schultze's, since it can be practised in the office, without administering an anæsthetic. The anterior lip of the cervix is seized with a volsella, and is drawn downward and forward, being held in position by an assistant. The examiner can then map out the entire posterior surface of the uterus as high as the fundus, can detect any adhesion, and can tear it if it is not too strong. The uterus may then be lifted on the finger, while the external hand is inserted behind the fundus, so as to draw it forward. If the organ cannot be replaced in this manner, the *portio vaginalis* is drawn backward and downward, and is held in this position, while the operator pushes

the fundus upward with his left index finger, assisted by manipulation through the abdominal wall. It is sometimes possible to hook the tip of the forefinger over the cicatricial bands, and to draw them downward and forward so as to stretch or tear them. If this fails, the cervix is again pulled down, and the index finger is pressed against the right border of the uterus, while the external hand pushes the fundus over to the left as far as possible, reversing the manœuvre if necessary.

The following is a brief report of the cases successfully treated by the writer:

Case I. The patient, æt. twenty-three, suffered from dysmenorrhœa, vesical irritation, and dyspareunia. The uterus was retroverted; a broad band could be felt, extending from the upper part of the posterior aspect of the organ to the sacrum. After preliminary treatment with "absorbifacients," attempts were made twice weekly to replace the organ, with ultimate success, the symptoms above-mentioned disappearing entirely.

Case II. A woman, æt. thirty, who had had two children by her first husband, married again, and remained sterile after four years. Her uterus was retroverted and attached by thick bands to the left sacro-iliac synchondrosis. After preparatory treatment, the adhesions were torn in two attempts, and the uterus was restored to its normal position. The patient eventually became pregnant.

Case III. The patient, twenty-four years of age, had suffered with pains in the rectum and abdomen of six years' standing. The uterus was adherent in a position of left retro-lateral flexion. It was restored to its normal position after two applications of the treatment above described. The patient was entirely relieved, and became pregnant.

Case IV. The patient, æt. twenty-three, was married at twenty-one, and had borne one child; she had septic trouble after confinement, and on convalescing developed pains in the back and abdomen, menorrhagia, and hysterical attacks before the menstrual periods, which recurred at irregular intervals. The uterus was enlarged, retroflexed, and adherent to the right border of the pelvic brim. After repeated efforts, the adhesions were separated, and the organ was brought to the median line. Some hemorrhage followed the operation, but this ceased spontaneously. In the course of two weeks the uterus was in its normal position, so that a Hodge pessary could be inserted. In two weeks more the symptoms disappeared, and the pessary was eventually removed. The patient remained under observation for a year and there was no recurrence.

In several instances adhesions were broken up at the writer's office, without preparatory treatment. Ordinarily two attempts were made weekly, but if much pain resulted, only one a week. If the bands are very thick one must be content with simply stretching them a little each time, instead of endeavoring at once to tear them. If the entire posterior surface of the uterus is adherent, or the organ is buried in a mass of adhesions, he does not try to detach it.

Laceration of the Cervix and its Treatment.

Sänger (*Schmidt's Jahrbücher*, Bd. ccxv. page 206) details the results of his observations, which are interesting as presenting a fair view of the subject

from the standpoint of an enlightened German specialist. Among 1500 gynecological patients he noted 13.4 per cent. with laceration of the cervix, one-third of the number being primiparæ. He states quite positively that no cervical tear heals by first intention. Ectropion is frequently observed, due in the writer's opinion to the presence of both subinvolution and cervical endometritis.

The results of laceration are disease of the endometrium, chronic metritis, and parametritis; the latter was noted in 40 per cent. of his cases, and was usually unilateral and confined to the left side, sometimes giving rise to right latero-flexion. Sänger never observed oöphoritis as a consequence of a cervical lesion, as described by some writers. Sterility was only "relative."

The chief symptoms noted were leucorrhœa, menorrhagia, and "pains in the parametrium;" hystero-neuroses were also present. Emmet's operation is the only proper treatment of this condition; if there is indurated tissue in the angle of the tear and in the adjacent parametrium, preparatory treatment with iodine, massage, and hot vaginal injections is advisable. He operated upon twenty-two patients; in nineteen the wound healed perfectly and in every instance the bad symptoms disappeared.

Supra-vaginal Amputation of the Uterus.

Krassowsky (*Centralblatt für Gynäkologie*, March 24, 1888) reports nineteen cases, with a mortality of forty-four per cent. In twelve cases the stump was treated extra-peritoneally, with a resulting mortality of fifty per cent., while by the intra-peritoneal method it was only thirty per cent. In seventeen cases the operation was complicated by the presence of numerous adhesions. It was in each instance performed under carbolic spray; for cleansing the hands, instruments, and ligatures a solution was employed consisting of one per cent. of biniodide of mercury and three-fourths of one per cent. of iodide of potassium. The closed wound was painted with a mixture containing four parts of biniodide of mercury and eight parts of collodion in alcohol (ninety-five per cent.).

The writer queries whether it is not always better when, in the course of an oöphorectomy, a fibroid uterus is discovered to be content with removal of the ovaries, whether both are diseased or not. He is undecided as to the advisability of completing an ovariotomy by removal of the uterus with the cyst, when the two are firmly adherent.

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